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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

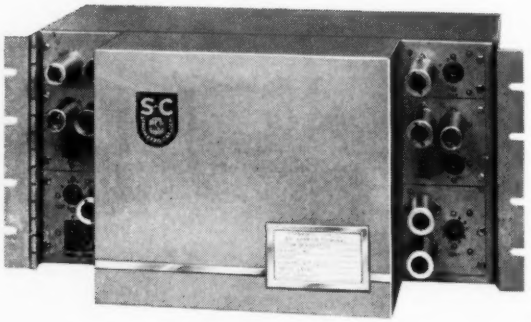
USITA ANNIVERSARY CAKE

Huge USITA 60th anniversary cake was on display in lobby of Conrad Hilton Hotel as 3300 met for annual telephone convention. This issue includes complete coverage of talks and reports given in the sessions.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

XUM

Takes much less rack space . . . and brings you 7 more key benefits!



Because space is at a premium in your exchange, you can readily see the advantage of buying carrier that requires less space than some other make you may have considered.

A unit of Stromberg-Carlson "501" Carrier takes only 8¾ inches of vertical space on a 19-inch rack. In addition, Stromberg-Carlson equipment gives you a combination of 7 other important benefits.

1. You pay less for "501" Carrier than for the next lowest priced competitive equipment . . . 10% to 40% less!
2. You have a choice of 4 channels stackable or 3 channels integrated.
3. You get toll quality frequency response: −3 db points at 350 and 2900 cps; −10 db points at 200 and 3200 cps.
4. Voice limiters safely reduce excess voice currents that can cause unwanted relay operation.
5. You have only 9 controls in a "501" System, which means simplified operation and less chance of breakdowns.
6. You may use ringdown or dial operation and convert from one to the other by simple wire strapping on the terminal board. There are no parts to change.
7. You get complete, factory-wired units. No external connections are required except to switchboard and line.

Small space requirement, lowest cost, and extra operating advantages add up to a bright profit picture when you buy "501" Carrier. For complete technical details write or call the Stromberg-Carlson representative in your area. He'll be glad to furnish a free copy of Booklet T-2014.

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ALL NEW "501" CARRIER

FLASHES AND PLUGS

GIRL'S BEST FRIEND. If you're financially down and out in Japan, you may soon be able to hock your telephone to borrow some needed cash, reports *International News Service.*

The government, taking cognizance of hard-pressed small businessmen who need loans in a hurry, is drafting a special permit to allow telephones to be pawned.

Telephones in Japan are practically worth their weight in gold. To have one installed, you must buy almost $170 of telephone and telegraph bonds and pay nearly $100 to have it installed.

•

EXIT CUE. Two old ladies arrived at a world series game just as the batter hit a home run. They sat watching the game in silence until—several innings later—the same batter came up to bat and hit another home run.

One of the ladies tapped the other on the shoulder and said: "Let's go. This is where we came in."

•

TRAGEDY ANTICIPATED. An excited woman in Dayton, O., called the police to report an accident. Asked where it was, she said "I don't have time to talk about it now. I'll tell you when they get here." Then she hung up.

•

RAPID TRANSIT. A red-faced character, who was carrying a pretty good "load," staggered to the cab stand in front of the City Hotel and climbed into a waiting taxi.

"Take me to the City Hotel," he muttered.

"We're in front of the hotel now," said the cab driver.

"Okay, okay," he retorted. "Next time don't drive so fast."

•

CALL GARBAGE DISPOSAL. A service assistant is unreliably reported to have overheard an agitated student operator incredulously ask, "*What* do you have dead?"

The SA hurriedly plugged in and the student explained, "This man says he has a dead lion—what do we do in that case?"

•

DIM VIEW. "When I look down the untrodden paths of the past," thundered the orator (not at the USITA convention)—"I see in the future the vague outlines of the footprints of an unseen hand."

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

October 26, 1957

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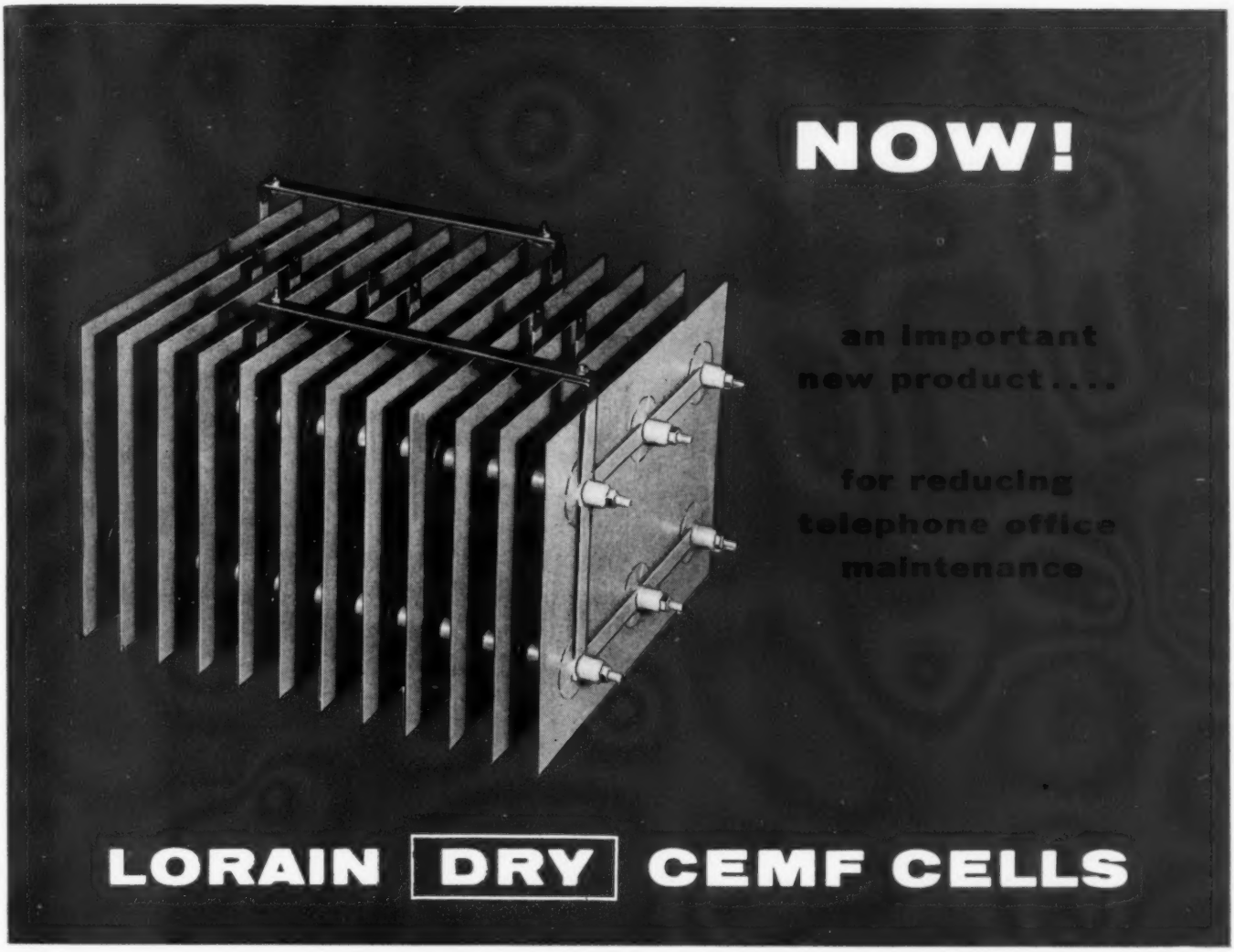

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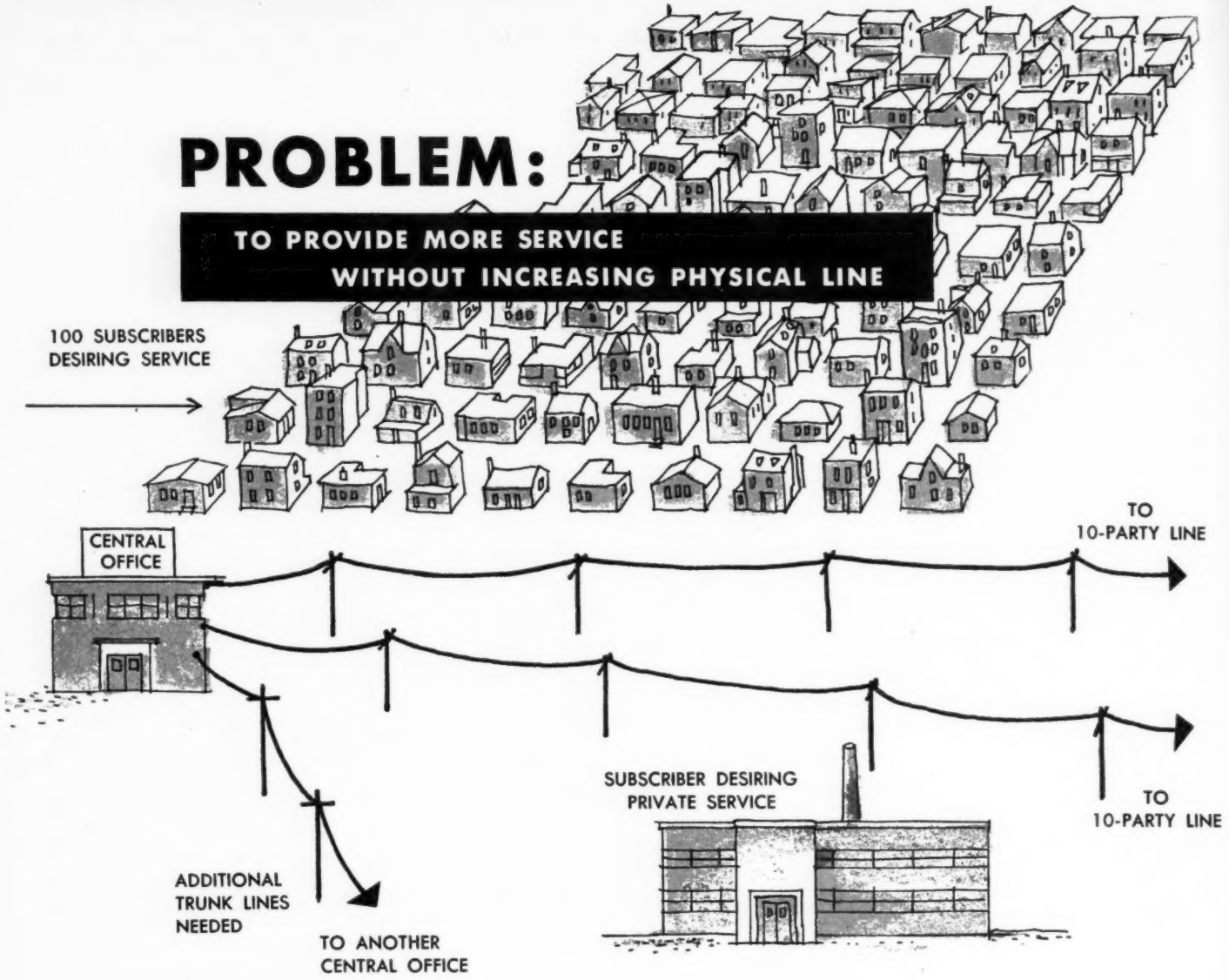

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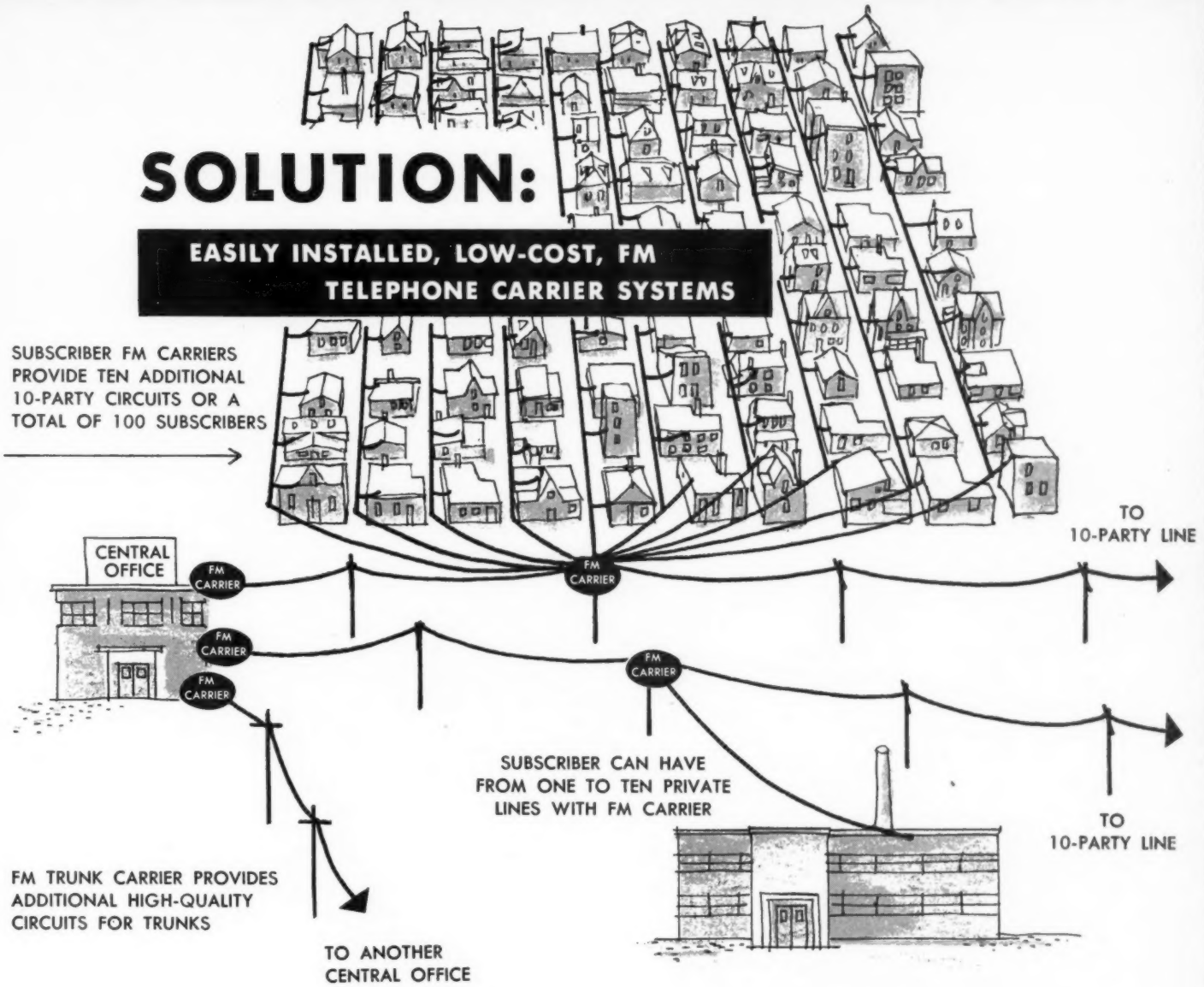
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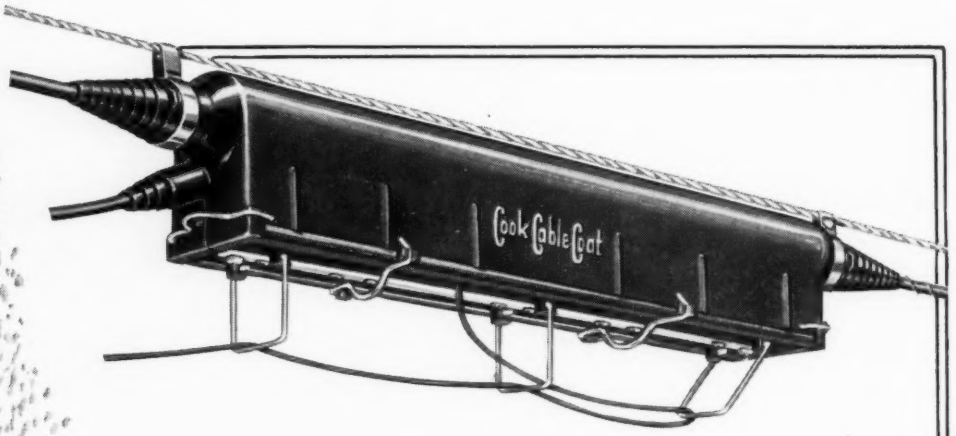

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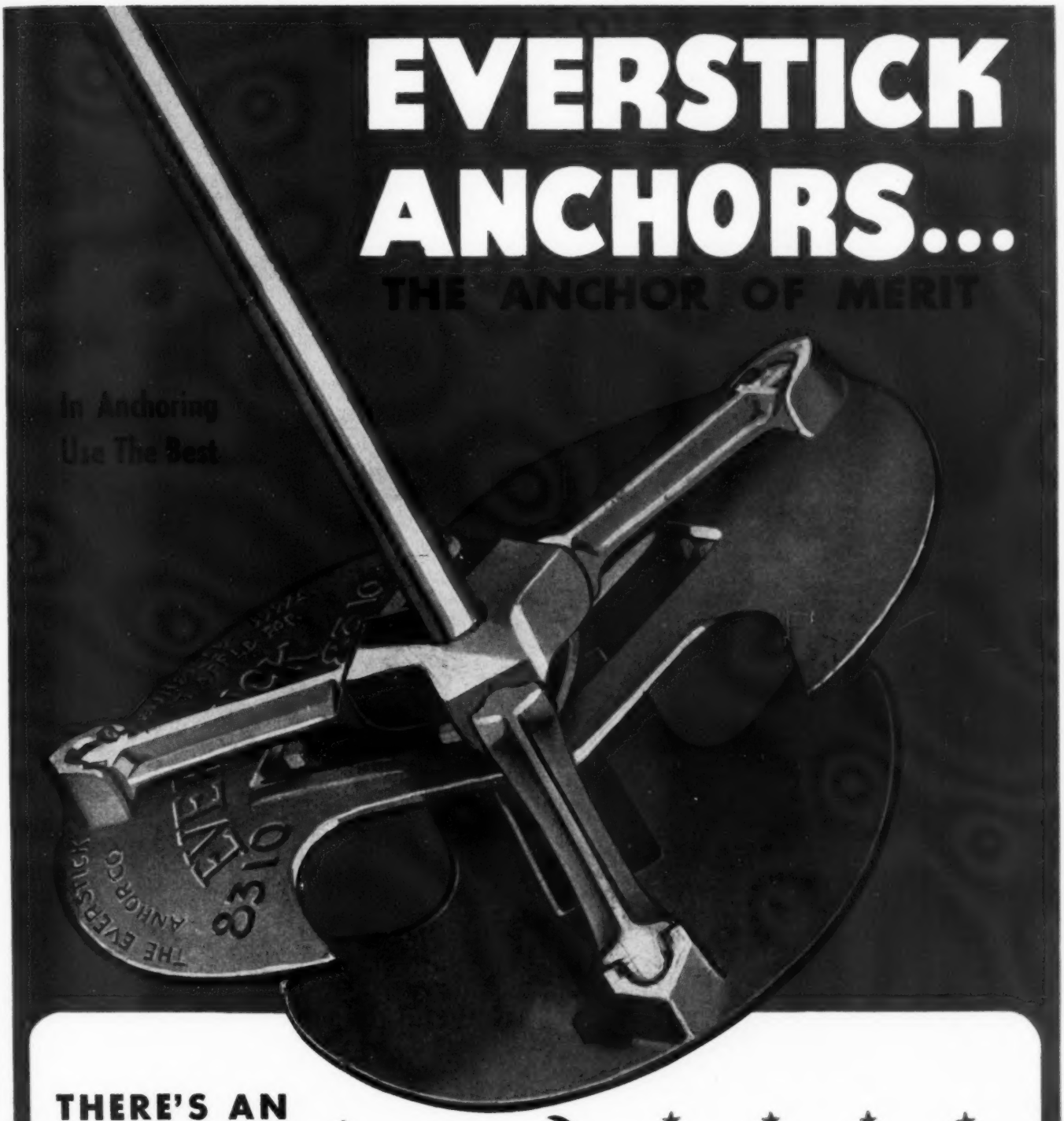

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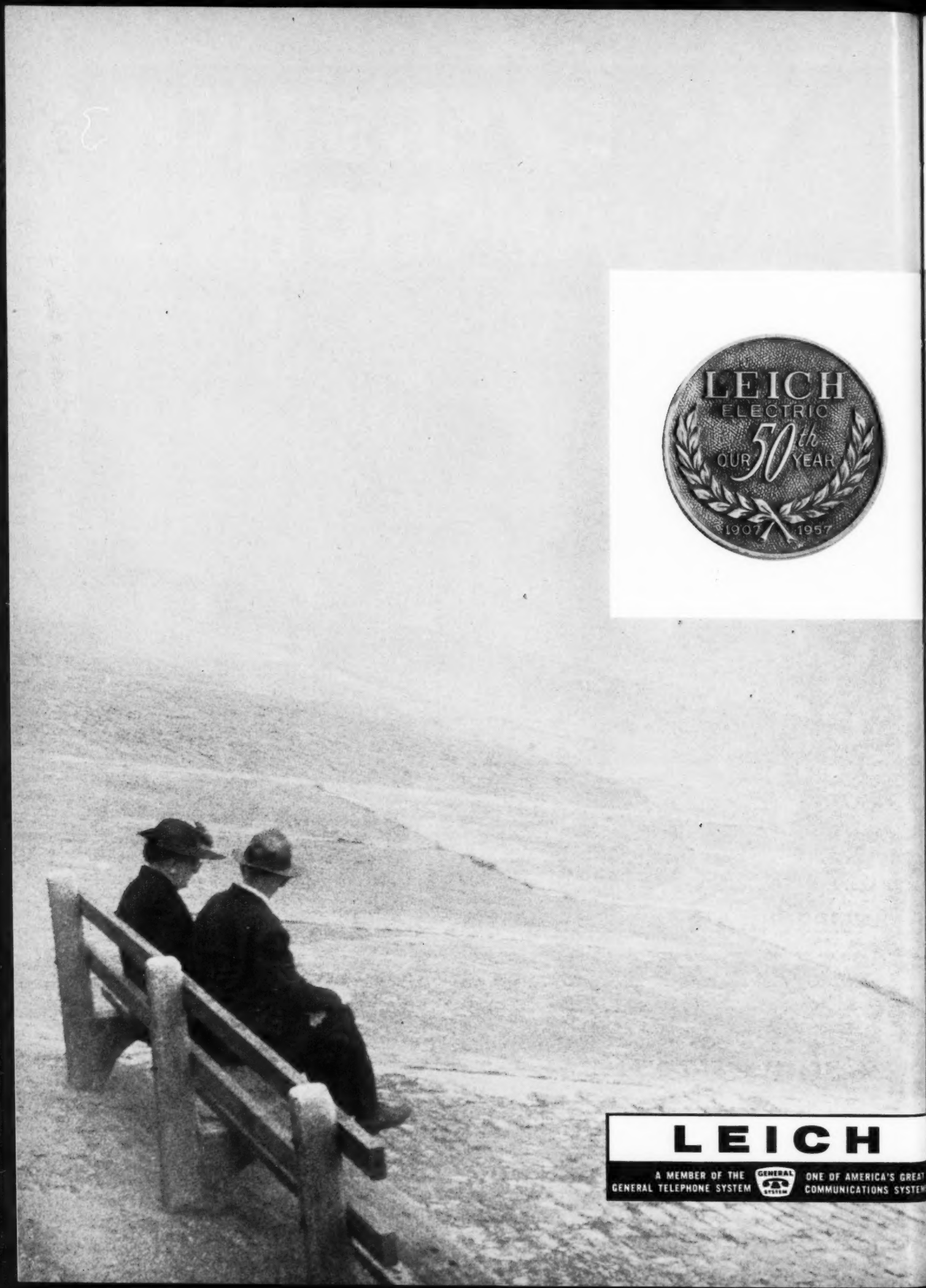
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naturally we're proud...
certainly we're grateful

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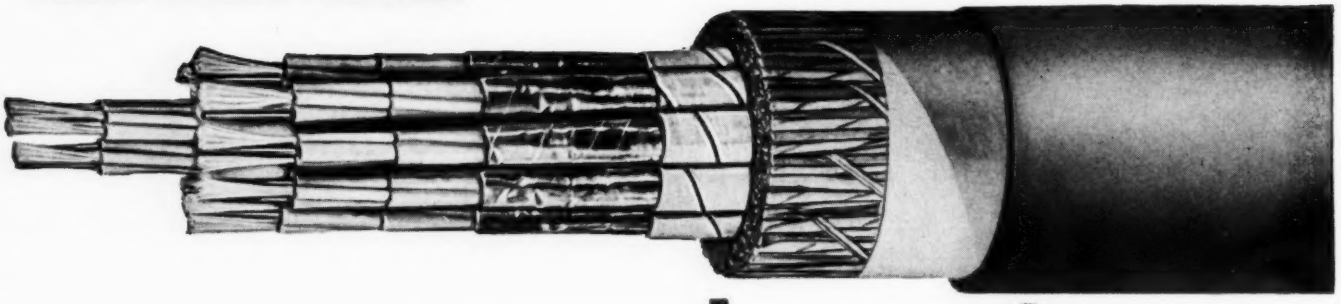

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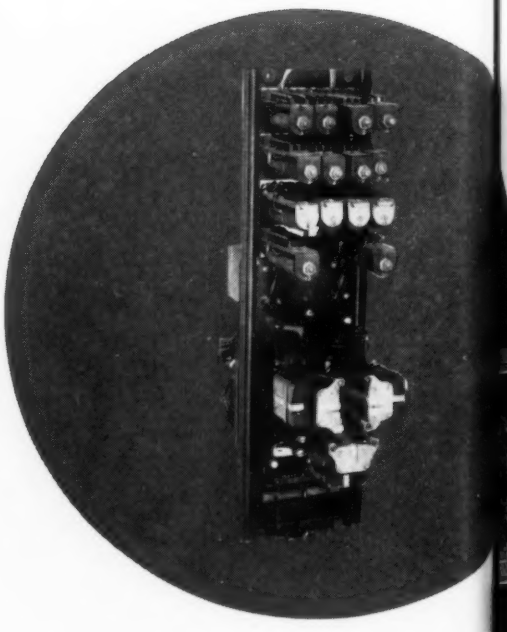

NORTH salutes the USITA on 60 years of leadership.

The Independent Telephone Companies of America have attained, through this leadership, new stature in the American scene.

Continued progress is assured by the confidence expressed by the entire Telephone Industry in the future.

Great strides have been made in the past — from this switch of yesteryear to the modern North By-Path Crossbar switch.

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North is proud of its part in the past — proud of the part North will play in this even greater future.

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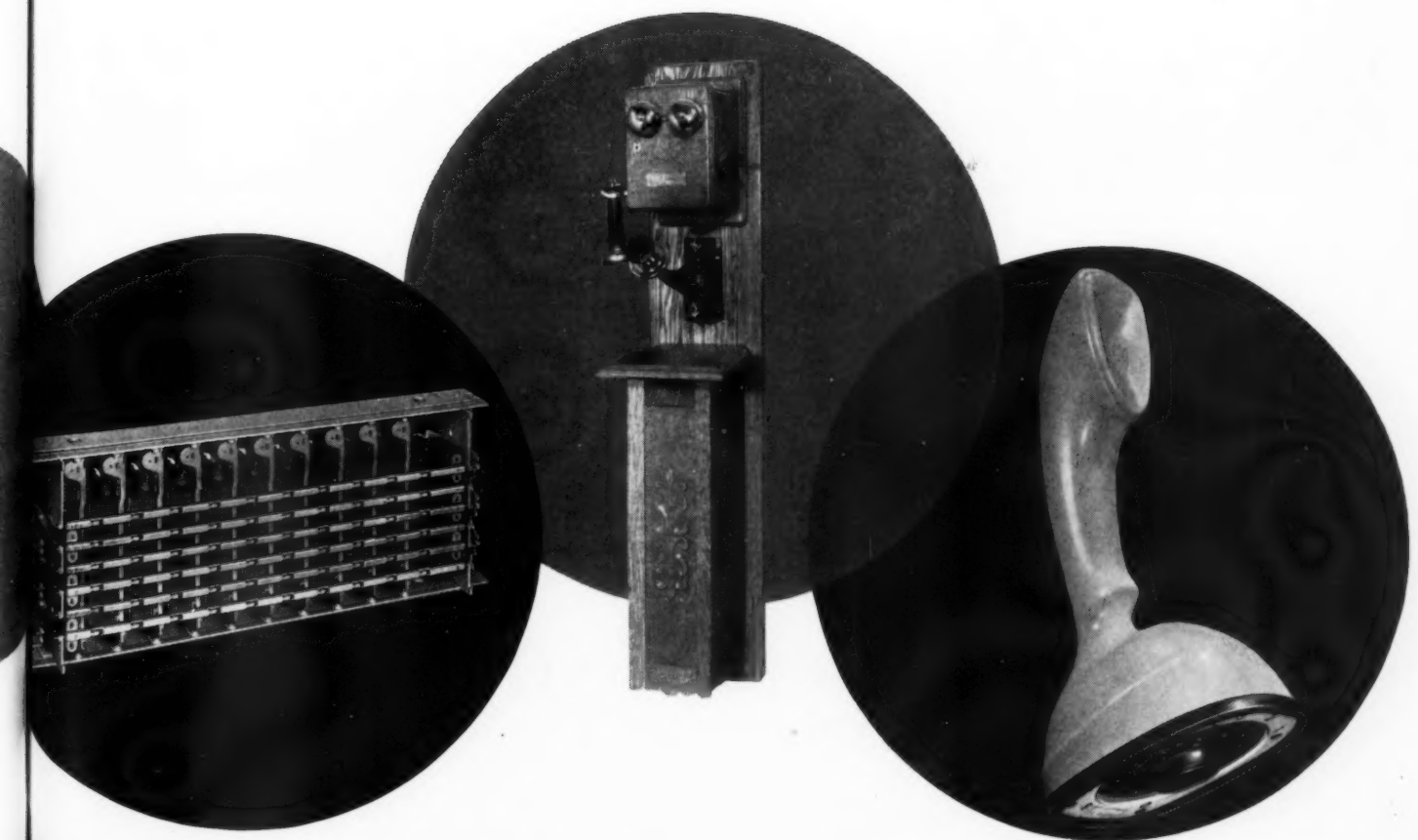

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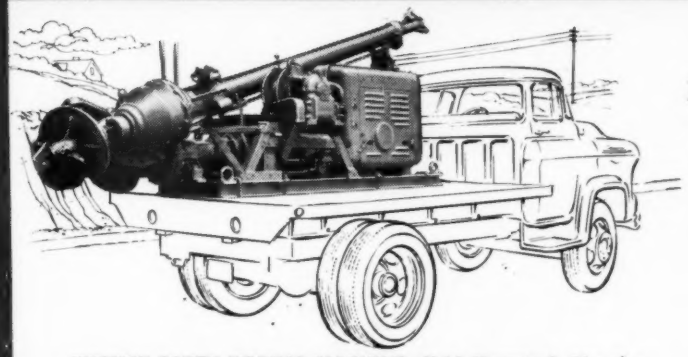
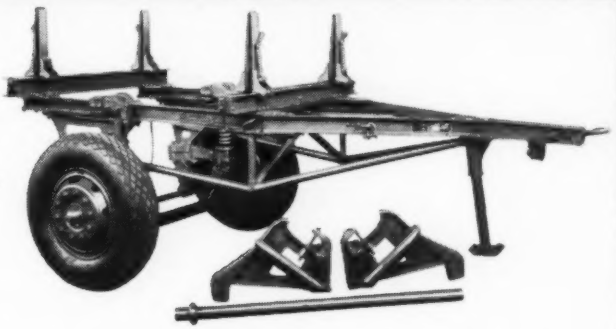


"HCMS" EARTH-BORING MACHINE, Skid-Mounted. Digs the hole in any type of soil . . . 9 to 36 inches in diameter up to 10 feet deep . . . and sets the pole. Powered by a separate engine mounted integrally on steel skids. Entire machine may be quickly mounted or removed from truck platform.



"PCP" COMBINATION TRAILER. Combination pole and cable reel trailer. Bolsters with sliding cam-locking stanchions are quickly mounted or removed as required. Cable reel saddles can be attached quickly and securely. Adjustable to different width reels.

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SALES AND SERVICE IN PRINCIPAL CITIES

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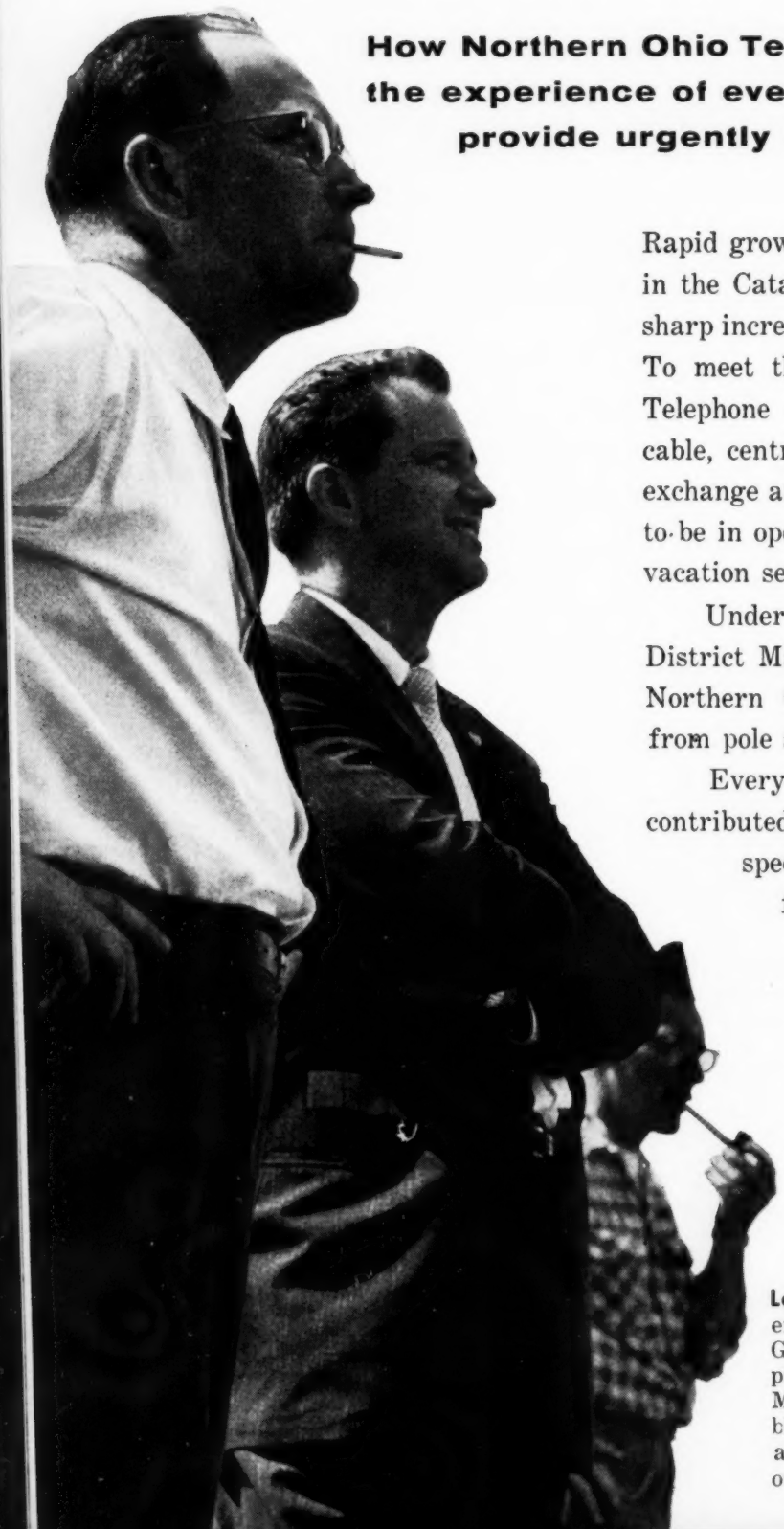
They met the "in-service" deadline at Catawba Island

How Northern Ohio Telephone Company used the experience of every man on their team to provide urgently needed service on time



Rapid growth of the popular vacation country in the Catawba Island area of Ohio caused a sharp increase in the need for telephone service. To meet these new demands Northern Ohio Telephone rushed construction of pole lines, cable, central office equipment for a new sub-exchange at Catawba Island. The facilities had to be in operation before the start of the next vacation season.

Under the skilled direction of Jim Peltier, District Manager of the Port Clinton area of Northern Ohio each task was programmed, from pole setting to cable splicing.

Every man connected with this project contributed generously from his own skills and specialized experience. Result: the new facilities went into service on time.

Left, Jim Peltier, District Manager of Northern Ohio Telephone and George Ostrander, Graybar Telephone Specialist, watch the pulling in of new cable at Catawba Island. Mr. Peltier has designed and patented a block for pulling in rural distribution cable and enjoys the satisfaction of having his own invention speed up the work.

Above, Clayton Stager, lineman with Northern Ohio Telephone Company, guides a new 12-quad 19 gauge cable, plus 303 pair 19 gauge, supplied by Graybar, as it is pulled in.

Useful life in a telephone pole depends upon wide selection of wood and its treatment to resist weather and insects. Here William Nelson, (left), sales representative of International Creosoting & Construction Co., Warren Ritter, (right), Northern Ohio Purchasing Agent, and George Ostrander, (center), check up on one of the treated pine poles delivered by Graybar for this carefully programmed construction job.

And, speaking of key materials, William C. Henry, President of the Northern Ohio Telephone Co., has this to say about Graybar:

"In meeting rigid schedules on important construction projects as well as routine needs, we expect and require from our suppliers the best and newest in equipment and materials, plus on-time deliveries. Graybar people work as closely with us as the members of our own staff. We can always count on their cordial teamwork."

We at Graybar are proud to be on the construction and maintenance teams of Northern Ohio, and other great independent telephone companies across the nation. Graybar is wholly owned by its operating and retired personnel and, like you, we're proud of our own independent status. You'll get that extra bit of attention from friendly people, anxious to please. For anything electrical, from the top of the pole to the bottom of the hole, call Graybar *first.*

749-2310

Call Graybar first for...

Graybar 1 Quality Everything Electrical

GRAYBAR ELECTRIC COMPANY, INC.
420 Lexington Avenue
New York 17, N.Y.

IN OVER 130 PRINCIPAL CITIES

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1 out of 13

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You, too, should have L. M. Berry and Company handle the complete planning and selling of your Directory Advertising.

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USITA Convention Report

By R. C. Reno

THE 60TH anniversary convention of the United States Independent Telephone Association, held Oct. 14, 15 and 16 in Chicago, drew a record attendance made up of 3,300 telephone men and women from every state, possession and territory of the United States, and representatives of many foreign countries. The previous high attendance mark was 3,000, set at the 1956 convention.

The convention received greetings from President Eisenhower in a telegram which was read at the opening session by USITA President Donald C. Power. The telegram follows:

"To those attending the 60th anniversary convention of the United States Independent Telephone Association, I send greetings. America's wide and expanding telephone network is a vital part of our economy and way of life. Congratulations to all the men and women of your association who serve our nation's homes and community enterprises through this means of communication. Best wishes for a memorable convention."

Of course, there was quite a bit of reminiscing and "looking back" over the progress of the Independent industry during the past 60 years by convention delegates. But most of their attention was directed to present and contemplated telephone developments, displayed by more than 80 exhibitors and discussed by many speakers, and to the necessity of putting the new techniques to work so that the telephone industry can and will maintain its leading position in supplying the most dependable communications to an ever-expanding America.

Among these new developments and techniques were (1) modern merchandising and sales techniques to sell service; (2) up-to-date office, billing and accounting machines and practices; (3) Direct Distance Dialing; (4) automatic toll ticketing; (5) special services (such private line, data transmission; closed TV, etc.); (6) microwave radio; electronic switching and testing equipment; (7) special educational programs and courses for engineers and plant personnel.

Discussed at length at the convention was one point of concern to the telephone industry—the FCC hearings on the allocation of radio frequencies between the telephone industry as a common carrier and non-communication companies, in which the USITA and the Bell System have intervened. The outcome of these hearings could mean that, in the future, the industry would not have sufficient frequencies to permit it to act in its rightful role as the predominant agency to furnish the over-all communication service to the nation.

Stanley, Electronic Section In the Nov. 2 Issue

In order that we can devote this entire issue to the report of the USITA convention, the regular monthly features "TELEPHONY's Electronics Section" by Harold B. McKay and "Today's Highlights of Finance, Taxes, Business Trends," by Willard F. Stanley (usually published in the last issue of each month) will be published in the Nov. 2 issue.

Another point stressed from the speakers' platform is the need for high rates and earnings if telephone companies are to maintain their plants, and to attract new capital with which to expand their systems and adopt new improvements and techniques in order to meet the public's demand for more and better communication service. This is a matter that not only concerns telephone companies, but, as pointed out at the convention, it should concern regulatory commissions as well, if they are to carry out their responsibilities to both the public and telephone companies they regulate.

Convention delegates welcomed two past presidents of the USITA, both retired from active telephone work, who returned for the association's 60th anniversary celebration—John H. Agee of Menlo Park, Cal., long-time vice president and general manager of Lincoln (Neb.) Telephone & Telegraph Co., and USITA president in 1937-38; and Harold V. Bozell, of New York City, former president of General Telephone Corp. and USITA president in 1949-50.

Of interest to Independent companies was a change in the USITA by-laws adopted by the convention. It was voted to eliminate from the by-laws the section providing for accredited association membership for companies with $50,000 or less annual revenues if they were members of state associations. To be members of the USITA, such companies must now pay the regular dues assessed by the association.

The USITA board of directors, at its meetings during the convention,

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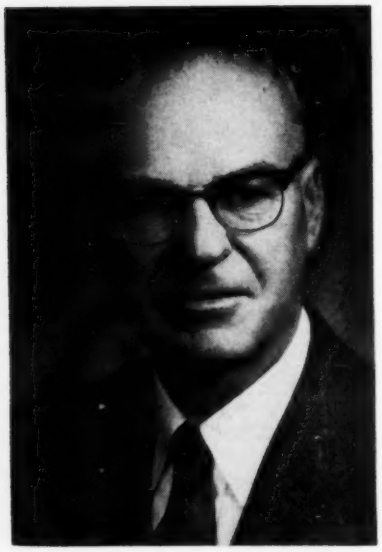
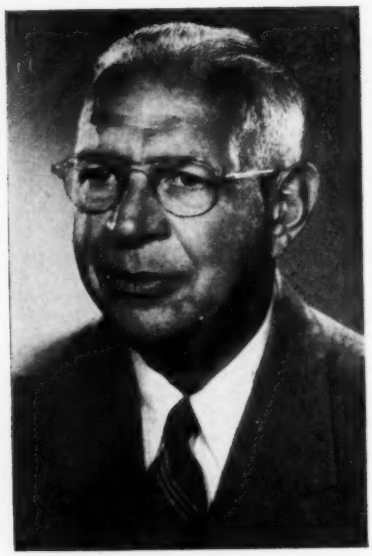


C. W. HAAS
President



H. A. BARNHART
First Vice President

F. B. McHENRY
Second Vice President

H. E. HAGEMAN
Third Vice President

took several actions of interest to USITA members, among which were:

(1) Adopted a resolution expressing the association's appreciation for the excellence of the pre-convention issues of TELEPHONY and Telephone Engineer and Management.

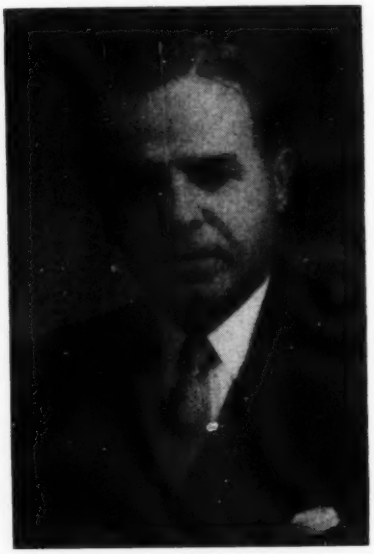
(2) Authorized the employment of an accountant-statistician to assist USITA Toll Engineer Mervin H. Alexander in making toll compensation studies.

(3) Authorized additional space for the association's Washington headquarters office.

The board presented President Power a sterling silver bowl in token of esteem and in appreciation of his service and leadership as president during the past year.

New directors elected by the convention are: H. G. Allen of Milton Junction, Wis.; F. S. Barnes of Rock Hill, S. C.; H. A. Barnhart of Rochester, Ind.; Harold Bollinger of Waconia, Minn.; T. A. Boyd of New York, N. Y.; D. H. Campbell of Rochester, N. Y.; E. H. Danner of San Angelo, Tex.; R. J. Fegan of Junction City, Kan.; W. C. Henry of Bellevue, O.; S. A. Lane of Russellville, Ark.; F. B. McHenry of Jefferson City, Mo.; L. H. Meyer of Ft. Wayne, Ind.; W. G. Winters of Houston, Tex.

Other directors are: J. B. Atherton of Honolulu, Hawaii; E. G. Bellamy of Knoxville, Ia.; E. M. Blakeslee of Santa Monica, Cal.; C. D. Brorein of Tampa, Fla.; Ray Dalton of Everett, Wash.; L. D. Densmore of Lincoln, Neb.; C. W. Haas of Big Timber, Mont.; H. E. Hageman of Lorain, O.; M. M. Hale of Lincoln, Neb.; A. L. Hart of Kansas City, Mo.; L. W. Hill of Tarboro, N. C.; W. P. Hollis of



C. S. BAILEY
Executive Vice President

C. D. BROREIN
Treasurer

G. C. RICHERT
Secretary

USITA Executive Committee

C. W. HAAS, Big Timber, Mont., Chairman
F. S. BARNES, Rock Hill, S. C.
C. D. BROREIN, Tampa, Fla.
RAY DALTON, Everett, Wash.
L. D. DENSMORE, Lincoln, Neb.
R. J. FEGAN, Junction City, Kan.
W. C. HENRY, Bellevue, O.
F. G. LAPRADE, Martinsville, Va.
D. C. POWER, New York, N. Y.
A. J. SORDONI, Wilkes-Barre, Pa.
R. C. TAIT, Rochester, N. Y.

Chicago; D. O. Hood of Medford, Ore.; H. Y. Kraepelien of Galion, O.

Also F. G. LaPrade of Martinsville, Va.; R. A. Lumpkin of Mattoon, Ill.; Kelley McNish of Bristol, Tenn.; C. C. Pearce of Riceville, Ia.; D. C. Power of New York, N. Y.; A. J. Sordoni of Wilkes-Barre, Pa.; R. C. Tait of Rochester, N. Y.; L. H. Warner of New York, N. Y.; W. G. Wright of New York, N. Y.

The directors elected the following officers for the ensuing year: President, Mr. Haas; first vice president, Mr. Barnhart; second vice president, Mr. McHenry; third vice president, Mr. Hageman; executive vice president, Clyde S. Bailey of Washington, D. C.; treasurer, Mr. Brorein; George C. Richert of Washington, D. C., and assistant secretary, Courtney S. Snyder of Washington, D. C.

The following directors were appointed members of the executive committee: C. W. Haas of Big Timber, Mont., chairman; F. S. Barnes of Rock Hill, S. C.; C. D. Brorein of Tampa, Fla.; Ray Dalton of Everett, Wash.; L. D. Densmore of Lincoln, Neb.; R. J. Fegan of Junction City, Kan.; W. C. Henry of Bellevue, O.; F. G. LaPrade of Martinsville, Va.; D. C. Power of New York, N. Y.; A. J. Sordoni of Wilkes Barre, Pa. and R. C. Tait of Rochester, N. Y.

Secretaries of state telephone associations held two meetings during the convention—on Oct. 16 and 17. At the Oct. 16 meeting the new USITA officers were introduced and they expressed their appreciation for the cooperation the state secretaries extend to the national association throughout the year.

The Independent Telephone Pioneer Association also held its annual meeting on Oct. 15. Following a short business meeting, the Pioneers were entertained by two barber-shop quartettes. The principal items at the business meeting were reports by President Ralph F. Lucier of Warsaw, Ind., Executive Secretary and Treasurer Mayme Workman and various committees.

The following Pioneer directors were elected: R. J. Alter of Galesburg, Ill.; George Hearne of Kansas City, Mo., and K. L. Lawson of Lincoln, Neb. They succeed the following, whose terms expired: Mr. Lucier, Kelley McNish of Bristol, Tenn., and S. F. Nixon Sr., of Westfield, N. Y.

The Pioneer directors elected the following officers: President, R. N. Cole of Portsmouth, O.; vice presidents, D. B. Corman of Glasgow, Ky., and W. P. Strickenburg of Meadville, Pa., and executive secretary and treasurer, Mrs. Workman.

A full report of the Pioneer meeting will be published in the Nov. 2 issue.

To provide a permanent record of the convention proceedings for those who did not get copies of addresses and for those who were unable to attend the convention, TELEPHONY, as it has done in past years, is publishing on succeeding pages, addresses given at the general sessions and conferences, with the exception of the address by Gov. Theodore R. McKeldin of Maryland, which will be published in a later issue.

The chief executive of Maryland, well known as the Republican convention delegate who nominated President Eisenhower in 1952, in a forceful speech on "The Place of Independence in a Complex World," expressed optimism as to its survival in spite of today's challenges. Tremendous pressures operating today would reduce man to a cog dominated in thought and action, but such pressures are no greater than those which have been met and conquered in the past history of our country, he stated.

Independents in business, politics or social relations, it was pointed out, derive independence from a "firm belief that all men are created equal and endowed by their Creater with certain inalienable rights, and an equally firm belief that if we fail to defend these rights, we shall eventually lose all freedoms, economic, political and social."

Since man is interdependent upon man, in modern society independence in the absolute sense can not be attained. However, those who fear for its continued existence today do not understand its real meaning, for in the definitive sense, independence is a deliberate choice, not the conditions in which we find ourselves.

The independent man is directed by forces from within, not by forces from without; in making his decisions, he is concerned not with what others think of him, but what he thinks of himself. Such a man makes necessary adjustments to the complex civilization in which we all must live, without forfeiting his own convictions. Communism does not believe in the inner directed man for they "simply do not go together," he pointed out. One destroys the other.

Governor McKeldin congratulated the Independent telephone industry for meeting this definition of independence in its truest sense; for having survived by adjustment; for finding the means of retaining a degree of liberty of action in a changing world, all this requiring, he said, as in all cases where it is retained, by "thought, planning, sometimes great ingenuity, sometimes no small courage, and always energy and determination."

New USITA Officers

President
C. W. HAAS, Big Timber, Mont.

First Vice President
HUGH A. BARNHART, Rochester, Ind.

Second Vice President
FOSTER B. McHENRY, Jefferson City, Mo.

Third Vice President
H. E. HAGEMAN, Lorain, O.

Executive Vice President
CLYDE S. BAILEY, Washington, D. C.

Treasurer
CARL D. BROREIN, Tampa, Fla.

Secretary
GEORGE C. RICHERT, Washington, D. C.

Assistant Secretary
COURTNEY S. SNYDER, Washington, D. C.

New USITA Directors

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F. S. BARNES, Rock Hill, S. C.
H. A. BARNHART, Rochester, Ind.
HAROLD BOLLINGER, Waconia, Minn.
T. A. BOYD, New York, N. Y.
D. H. CAMPBELL, Rochester, N. Y.
R. J. FEGAN, Junction City, Kan.
W. C. HENRY, Bellevue, O.
S. A. LANE, Russellville, Ark.
E. H. DANNER, San Angelo, Tex.
F. B. McHENRY, Jefferson City, Mo.
W. G. WINTERS, Houston, Tex.
L. H. MEYER, Fort Wayne, Ind.

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A More and More Vibrant Independent Telephony

*By DONALD C. POWER, USITA President**

IT IS A REAL pleasure for me to salute all of you at this opening general session of the 60th annual convention of your United States Independent Telephone Association. I might say it is a double pleasure because my 12-month tour of duty as your association president, fortunately for me, happened to coincide with the 60th birthday of your national association. This is a memorable event which we have been celebrating for some months and for which special preparations have been made in this convention program.

So, it is with most sincere conviction that I congratulate you and every one at this convention, or elsewhere, who is in any way connected with the Independent telephone industry. As we review the accomplishments of this industry during the past 60 years and consider the impressive promise of present and future developments, we have a right to feel proud that we are part of this spectacular industrial achievement in the public service.

Birthdays, I must confess, always make me feel a little envious. You see I happened to have been born on Christmas Day. And while I have never regretted that such an event took place, nor that it took place at that time, it meant that all my life I have had to defer special observance of my birthday because of the general celebration of a very much more important birthday.

While I have always been very delighted to do this, nevertheless, it makes me appreciate an opportunity, such as this one today, to move in on somebody else's birthday—and make it my own, so to speak. And this is the way I feel about this sixtieth milestone in the history of your USITA.

Perhaps some of the Independent telephone men and women here today can share this feeling. Most of us are younger than 60, but many of us have seen, at first hand, and within the span of our own life experience, the growth and happening of various important developments which have made the American telephone industry what it is today. Those of us from the farm areas have witnessed the steady improvement of service and equipment from the old hand-crank and barbed-wire standards of our childhood to the beautiful multicolored automatic instruments which have become an accepted level of up-to-date service. We have seen long-distance service improve from the old-fashioned shouting contests to the modern commonplace use comparable in every way with local exchange calls. Those of us who were raised in urban areas have seen the density of telephone service increase from one or two telephones in a city block to an average of one for almost every home in the United States.

D. C. POWER

But, as you all know there are different ways, figuratively speaking, to celebrate birthdays. Some people, who like to live only in the present, celebrate with candlelight. You blow them out and eat the cake and that is all there is to it. Others like to use taillights, so as to keep looking back at the past and to reminisce about the road already traveled. But, there is a third way—and that is to use headlights—to look ahead and see where we are going as well as where we are.

Saluting the past is, of course, a proper part of our industry's birthday celebration. We must do this to give due credit to those who have labored in the past.

It is most fitting, therefore, on this festive observance in the history of your national Independent association, that we pay honor and respect to those who made present achievements possible. I refer to our pioneers, those who have gone before us—as far back as 1897 when a handful of determined, courageous, and far-sighted Independent telephone men put together the great national organization which meets today.

And, I refer also to those who may not have been industry leaders in the sense of occupying executive or official positions of Independent companies. There is honor enough to go around to all of them—the inventors, the manufacturers, the technicians, the professional specialists, and that great army of loyal and dedicated employes, linemen, operators, and all the others. To

*Mr. Power is also President of General Telephone Corp. of New York City.

them we pay tribute on this anniversary, because to them we owe the firm foundation and sound construction of the Independent telephone industry as we now know it. They have done their job. We who are here today still have ours to complete. And, if we want to match the record of their performance, we must, in turn, look ahead to the horizons of the future.

It is about that that I would like to deal mainly in my talk with you today. I would like to use the "headlight" approach to our birthday celebration to view the horizons of the future of the Independent telephone industry from this vantage point of our 60th anniversary. I will not attempt to predict or assume any powers of prophecy. Let us simply discuss our industry's outlook on the basis of circumstances which exist and trends which are already well known to all of us.

First of all, let us consider the most obvious and elementary question—Does the Independent telephone industry have any future? I think we could find our answer to that in the words of the theme song of that popular musical comedy of a few years back—"Oklahoma." Most of you will remember them, I am sure:

"Oh, what a beautiful morning.
Oh, what a beautiful day.
I've got a wonderful feeling
Everything's coming my way."

Yes, my friends, we have every reason to believe that things are coming our way and that there is a great future in store for the Independent branch of the telephone industry. The trend of population and business growth towards the service areas of our Independent companies has been pointed out so many times that I think we need not dwell on any statistical review at this point. We know it to be a fact.

The smaller cities and towns, and much of the area now principally serviced by thousands of our Independent companies, are plainly marked for great development in the years ahead. The important thing we must keep in mind is that, when this new business comes our way, as it surely will, we must be ready for it. This is our opportunity and also our responsibility. For, as we all know, there never was an opportunity without a corresponding responsibility.

The immediate past president of the USITA, Donald C. Power (right), and K. B. Schotte of Kittanning, Pa., get together for a chat before one of the convention sessions.

In preparing ourselves to make the most of these opportunities, I cannot think of a single over-all instrument of assistance for the Independent companies, particularly the smaller companies, more effective than your national association—the USITA. So, it necessarily follows that if the Independent industry is in line for a great future, the USITA is likewise promised a great future. There will be much important work for it to do.

I would like to say at the outset that the prospects are not all rosy, by any means. There are darker and deeper tones, as well as bright spots and silver linings. One of the darker tones certainly is the shadow of inflation which has been moving across our national economy for the past decade at an accelerating pace. Inflation is an elusive as well as a delusive phenomenon. Just when we think we have a promising program all figured out, a boost in operating expenses (including wages, materials, construction, or taxes) cancels out the benefits we hoped to receive.

We can also deceive ourselves with optimistic figures showing, for example, that our gross national product is going to increase by so many percentage points in such and such a year in the future. And, then, we discover that much of the dollar increase is merely to be accomplished at the expense of the lost purchasing power of the dollar. It is only the increase in net purchasing power of the dollars, which our industry expects to earn in the future, which really counts. Merely increasing the number of dollars we take in, while at the same time increasing the number of dollars we pay out in higher prices, can become an elaborate form of kidding ourselves.

Public utilities, in particular, because of their rigid rate controls are especially vulnerable to this kind of erosion in real earnings—due to inflationary dilution of revenues. They can suffer serious financial injury unless ways and means can be discovered to protect their earning position in terms of actual purchasing power. To permit ourselves to be lulled by rosy inflationary prospects, spelled out only in terms of deteriorated dollars, could put our industry in the position of the little boy I heard about who was ordered by his father to get rid of a puppy because he had too many pets already.

The little boy tied the puppy on his front lawn, along with a sign which said. "Puppy for sale—$400." When a friendly postman came around and saw the sign, he asked the little boy if that wasn't kind of a stiff price for a puppy. But the little boy insisted that $400 was the price he was going to get for the puppy, or he wouldn't sell him at all. The next day the postman noticed that the sign was gone and so was the puppy. Then he saw the little boy and his curiosity prompted him to ask if

Pictured with Gov. Theodore R. McKeldin (center) of Maryland, featured speaker of the USITA Convention are L. H. Warner (left) of New York City, and W. C. Henry of Bellevue, O.

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he had gotten his $400 for the puppy. "Yes, sir," answered the boy, proudly, "but, of course, I had to take back a couple of $200 cats in trade."

That brings us to the second problem I would like to mention as clouding our future before getting on to more pleasant topics. I refer to the problem of rate relief. It is entirely possible that wiser heads in Washington, or elsewhere, will eventually find some way of halting this steady march of inflation. But they have not found the answer yet and for the immediate future it is only being realistic to assume that inflation is going to be with us, until we see some definite signs to the contrary.

Along side of inflation, of course, we have more recently been confronted with the problem of the increasing cost of money. Our companies must naturally expect to pay more for new capital. But, our industry's position on this would be a lot stronger if we could be more certain of cooperative regulatory action in rate cases. How are we going to pay 6 per cent or even more on bonds—and that may be necessary for some companies—and how are we going to sell junior securities, unless the investor is aware or has some assurance that our companies will be permitted to earn enough dollars to pay off?

Some of our present regulatory thinking, which looks to the past instead of the future, and insists on regarding original cost dollar investment without regard to the loss of present-day dollar value, is getting more and more out of step with the times. The result of this kind of thinking, where it exists, is to put our telephone industry and other regulated public utilities in a financial strait jacket. It amounts to regarding the utility investor as a second-class citizen, financially. It has the effect of telling him that every other industry, every other business, every other type of investor is entitled to share proportionately in the growth of our economy, but he cannot share in it. He is to be confined to the dollar earnings of his original cost investment. The inescapable effect of this would be a flight from utility investment at the very time when more and more capital will be needed to realize our opportunities of further expansion.

Let me hasten to add that I am not at all pessimistic about this over the long run. But, I mention it in passing as one of those problems which still has to be licked. President Eisenhower recently referred to inflation as the greatest single domestic problem confronting his administration. I think we would all be inclined to agree with that. But, I have confidence that responsible regulatory authorities will face up to the requirements of our essential public service industries, and will do what is necessary to keep an adequate flow of investment capital available to us. Our job, of course, and I refer now to Independent companies, as well as to the USITA and our state associations, will be to show what is necessary. It will involve a never-ending task of education and publicizing our industry's economic needs. As far as rate cases are concerned, I see no immediate end in sight. Indeed, I think we will have to expect individual companies to seek rate relief, at more or less regular intervals, as long as this march of inflation continues. Public utility companies cannot be expected to hold the line on prices when the line is not holding anywhere else.

But, let us turn our sights now to the pleasant prospects of the future. And again, these are matters which will be of concern to your national association in the period ahead, just as they are to individual companies. I believe I could sum up these general prospects under the heading of five "S's"—Service, Size, Shape, Scope, and Success.

First, let us look at Independent service of the future. I refer to the business our Independent companies can hope to do if they are equipped to handle it, and go after it in the right way. I said earlier that things are coming our way. That is certainly true in almost any area of the country you care to inspect. Some places, of course, such as Florida and California, are going to experience phenomenal growth, according to all reliable forecasts. But, even in those states, where the projected population and business growth are less spectacular, the trend is away from the larger cities. It seems like everybody, who can afford to do it, wants to move out into the suburbs, and people already in the suburbs are moving farther out into the country.

Indeed, one of the real problems of our city planning and economy in the future would appear to be how to save the central districts of our older and larger cities from developing into slums. The more affluent taxpayers are moving out, and the taxeaters are moving in. While this is a matter of concern to all of us, our Independent industry finds itself in a relatively better position because our operations have been from the very beginning not based, mainly, on serving the central areas of the older, larger cities. We have some quite large city service, of course, in our Independent industry family. But, on the whole, as you will know, the Independents started out by taking over the service responsibility for the smaller communities. And, it is these communities which are today, and for the years we can see ahead of us, experiencing the greatest proportion of growth in business activity as well as population. The opportunity is ours, therefore, if our companies can equip themselves to take advantage of what the future brings.

That brings us to our second "S"—Size. I know there has been some concern expressed over the declining number of Independent company organizations. Of course, this is a trend which had been going on for a long time, possibly for as much as 30 years. I note in the historical booklet which USITA published for this 60th anniversary, reference was made to the fact that in 1927 there were 8,000 Independent companies. Today we have around 4,400. Yet, if we check back over this 30-year interval, we will find that the decline has been more or less constant. What is more important is the fact that these surviving 4,400 companies are today doing more business than ever before, serving nearly 11,000 exchanges with over 9.5 million telephone stations. With an investment of 2.4 billion dollars, they serve nearly two-thirds of the land area of the country.

These Independent companies are stronger and better equipped than ever before in the history of our Independent industry. There is every reason to believe that growth will continue and that economic strength will increase. We have got to realize that this tendency towards stronger units is not something peculiar to the telephone industry by any means. It is a natural and, to some extent, necessary evolutionary process. As industrial operations become more complex, individual companies must find their own economic level, just like the flow of a stream of water. No one can say what is the best size, or that there *is* any optimum size, for Independent company operations. The circumstances are bound to vary in each case. There is a place for many sizes of company operations in the future of our industry. But, where a company finds its operations becoming too difficult to continue with small-scale organization, it is only natural that it join forces with other adjacent organizations as a mutual solution to the same problem. The main thing, of course, is to establish an organization which can do the telephone service job that is necessary and do it efficiently, effectively and profitably.

In discussing my third "S," which stands for Shape, I refer to the shape of things to come. Not being a technical man, I would not presume to ap-

proach this from the standpoint of describing what is coming up in the way of future developments in equipment and operating practices. But we do know that some important changes are in prospect, just as important changes have been occurring all along. It is probably safe to say that, during the past few years, there has been more emphasis on the merchandising of telephone business, through new appliances and special service equipment, than in any corresponding previous period in the history of the industry. It is this accelerated pace of these new developments which must not catch us unawares.

As our Independent industry moves closer and closer to the goal of complete conversion to dial, the pressure for new and better ways of conducting our business will increase and it will surely result in a steady procession of equipment and plant improvements. Electronic switching, newer, and lighter forms of telephone sets, and considerable advancement in long distance and toll traffic operations are definitely in the works. Items which are in the laboratory today will move onto the drawing board tomorrow. And what is on the drawing board today will move into production tomorrow. It will take an alert and well-informed Independent telephone industry to keep abreast of this march of progress. Here, again, our national and state associations will have their parts to play.

The day has long gone when the telephone business could be considered in terms of merely exchange plant and pole lines. The shape of things to come will surely make greater use of both radio and electronic developments. Through that use, our Independent companies can look for their share of a prosperous future for the industry as a whole. We have already had much success in the merchandising of telephone appliances and special services, such as colored telephones, extensions, multiple subscriptions, hard-of-hearing and special signaling devices. But the surface has only been scratched.

The time is coming when no telephone company, however small, can expect satisfactory results without sustained activity and promotion along these lines. Thanks to effective advertising and publicity, the public is coming to expect these things of us, to an increasing degree. We must deliver the goods.

That brings me to the fourth "S," the scope of our Independent industry operations. This is a most important topic because of the uncertainties involved. I refer to the broad policy questions now being argued before the Federal Communications Commission, as to the role of the telephone industry in such fields as mobile telephone services and the use of microwave frequencies. Along with the Bell companies, your national association has already taken steps to protect the interests of the telephone industry, as such, in these newly developing fields of communication. There are those who argue that the telephone industry should be confined to a conventional station-to-station operation and that these newer forms of communication service should be denied to our industry. Needless to say, we do not accept that view. We consider the telephone business, not as a static art, but as a dynamic service which should be permitted to expand in scope as new technical facilities and practices become developed.

We must be aggressive in promoting that view. If we are not, we could be arbitrarily cut off in the scope of our future operations.

We must always bear in mind that our business is voice communication—*two-way* voice communication. It is a distinct type of service, in a class by itself. It not only differs from the one-way written or recorded communications traffic, which is exemplified by the telegram, or the United States mails, it is also different from the mass communication media, exemplified by radio broadcasting and television broadcasting and even daily newspaper coverage.

Only in the telephone business is there a real substitute for living spontaneous conversation between persons, for the free exchange of ideas or other human intelligence on a confidential person-to-person basis. So, if we are to fulfill our obligation of public service in the telephone business, our industry must be permitted to expand its scope in any manner in which two-way voice communication can be effected, whether it be by wire or cable or radio relay, or mobile radio, or point-to-point microwave.

The principle is the same in any case. There is no logic in cramping the scope of the telephone industry by denying or unreasonably curtailing the industry's use of these new arts. There is much work to be done in this area, in the years ahead, and I venture to say that this national association will be right in the thick of it.

My final "S" stands for Success and, in a way, that is what I have been talking about all along. But the success I refer to here is not only the success of profitable operation—making enough dollars to pay enough dividends to keep the share-owners happy.

If our Independent industry is to realize its full potential in a more and more vibrant future, it must be a success in every sense of the term. Primarily it must be a success in the public interest. It must give the public what it wants and create public confidence in it as a public servant. It must also be a success in providing for the people who work for it. It must merit the confidence of its employes, so as to attract qualified men and women to its ranks during a period of increasing shortage and industrial competition for personnel. The industry must be a success as free private enterprise in order to attract the necessary capital to keep plant expansion going at the proper pace. And, of course, there can be no success if nobody knows about it. A good public relations position is a veritable "must" in our industry's future. Again, our national association must bear considerable responsibility for accomplishing this goal.

What will a more and more vibrant industry mean in terms of new business? I recently had occasion to make some forecasts, based on statistical trends now in evidence. And, I would venture to say that if present population growth and economic trends continue as they are generally expected, the Independent telephone industry may be serving nearly 12 million telephones by the end of 1960 and may have in operation some 26 million by 1975.

In conclusion, I would like to thank the officers, directors, staff, committeemen, and the membership-at-large of the USITA for the many courtesies and considerations they have shown me during this past year of my presidency. Traditionally, the retiring president's address is supposed to be a sort of accounting for his stewardship. Actually, in my case at least, I must confess that I learned more than I contributed. I found upon taking office a well-established and effectively operating national organization.

I would like to take this occasion to assure all of you that you are well represented in Washington and elsewhere by this association of yours. I knew that before I took office. But, I know it now all the better from close and actual contact. This year brings to a close a most pleasant and rewarding experience. I would like to express my appreciation for the confidence you have bestowed on me and the unfaltering cooperation extended to me while I served as your chief officer. I am most grateful and I pledge my cooperation in the future to the incoming president and other officers to do all that I can, in whatever capacity I may be called upon to serve, in assisting this association towards a more and more vibrant future for Independent telephony.

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Excerpts of Report of

USITA Executive Vice President

By CLYDE S. BAILEY

SIXTY years ago, when the national organization of Independent companies was given birth, Grover Cleveland had just retired from the White House and William McKinley had taken over the reins of government. In the meantime nine other men have occupied the office of Chief Executive of the nation. Two major wars have been fought and won and the country has also gone through other armed conflicts. When the association was formed in 1897 the population of the country was less than 75 million. Today it is more than 160 million.

Then, the telephone industry that was started by the momentous invention of Alexander Graham Bell, in 1875, was barely becoming of age. The 900,000 telephones in use in the United States in 1897 have grown to more than 60 million, more than all of the rest of the world put together. Sixty years ago the total number of telephone exchanges was just a little over 2,200; today the number of Bell and Independent exchanges combined is 17,770.

The 60th anniversary invites rather alluringly a parade on the happy field of recollection of events historical, economic and personal. The temptation should be resisted here however because of the readable historical sketch prepared at our request by Francis X. Welch, as a part of the present celebration, entitled "Sixty Years of the Independent Telephone Movement," and an earlier sketch likewise noteworthy written by E. C. Blowmeyer of Chicago, in 1947, as a part of the association's Golden Jubilee entitled "50 Years of Independent Telephony." Of less importance but likewise written as a part of the 60th anniversary celebration is an article by myself entitled "How the USITA Functions Today" which appeared in the Sept. 28 issue of TELEPHONY.

Though the temptation earlier mentioned will therefore be resisted, it should be recorded in this report that in recognition of 60 years of distinguished history the governors of 30 states and Alaska this year issued proclamations setting aside the week of Sept. 8 to 14 as Independent Telephone Week. The governors in these proclamations referred to the contributions which have been made by Independent telephone companies and Independent manufacturers to the development of the communications art, and they paid a deserved tribute to Independent telephone men and women.

Vibrant Part of Economy

Underscoring the current meaning of our 60th anniversary, the theme chosen for this convention is "Independent Telephony—A Vibrant Force in a Dynamic Economy."

From a mere fledging in the late 90's the Independent industry has prospered and grown until today it has an aggregate plant investment of $2,323,052,000, more than nine million telephones, 100,000 employes, and more than 200 thousand stockholders. If the investment of Independent manufacturers and suppliers and their employes and stockholders were included, the respective figures would be even more impressive.

As a result of mergers and consolidations the number of Independent operating companies is decreasing, but telephones and subscribers and communities served are increasing. The number of companies today is about 4,400 compared with 9,200 in 1922 and 6,000 in 1940. Thus the merger trend is one that has been in progress for a number of years. . . .

Independent telephone companies today have aggregate annual operating revenues of more than 650 million dollars. Although most of the companies are in the category of small business, more than 90 have annual revenues in excess of 1 million dollars. The plant investment of most of our companies has doubled since the end of the war. In the case of many it has quadrupled.

It has been estimated that upwards of 40 million babies have been born to American families since the end of the war. In the next 10 years there will be another 40 million or more. This expansion in population is significant to the telephone industry along with other American business. It means more homes and countless conveniences required by an American standard of living. More homes mean more telephones. The American people are more telephone conscious than those anywhere else in the world. In the United States there is one telephone for every 3.1 persons, compared with an average of one for every 61 persons in the rest of the world.

Some projections recently made and commented upon in a member letter from your Washington office estimated that Independent companies may be serving about 12 million telephones by the end of 1960 and have in operation some 26 million by 1975. . . .

Conversion to dial telephone service is going forward rapidly. . . . Already about 70 per cent of all Independent telephones are dial, compared with 90 per cent in the Bell System. At the present rate of progress it is estimated that all Independent exchanges can be converted to dial within 10 years.

All of these circumstances point clearly to the prospect that barring unforeseen developments, good business is ahead for the telephone industry. They also point to the need for large amounts of new capital, to constantly expanding employment opportunities, and to the need for continuing attention by management and regulatory authorities to subscriber rate levels so that through adequate earnings

investors may be attracted to our field and expansion and improvement may proceed in an orderly way.

Legislation

While activity in legislative matters is not the principal function of your association, it is natural and proper when measures are pending before Congress in which the Independent segment of the telephone industry is interested, that your organization should seek an opportunity to express its views.

Legislation of interest to Independent companies, considered at the last session, may be listed under the following headings:

(1) Bills to extend the coverage of the wage-hour law.
(2) Bills to increase the minimum wage.
(3) Bills to increase the securities exemption.
(4) Bills to repeal the reimbursement provisions of the 1956 Federal Aid Highway Act.
(5) Bills to repeal excise taxes on telephone service.
(6) Bill dealing with tax administration and technical provisions of the tax code.
(7) Bills to boost the REA interest rate.

I shall discuss briefly developments that have taken place respecting each of these measures and indicate their present status. As will be seen, although some of the measures made progress in the legislative process, none was enacted into law.

Bills to Extend Coverage of the Wage-Hour Law. The most important piece of pending legislation, to the smaller Independent exchanges, was probably that involving the switchboard operator exemption under the Wage-Hour Act. Two bills were introduced at the last session dealing exclusively with this exemption, one by Senator Morse (D., Ore.) and the other by Congressman Miller (D., Cal.). A number of other bills were introduced to repeal various exemptions including ours.

Only limited hearings on bills in the Senate were held by the Kennedy subcommittee of the Committee on Education and Labor. . . . Notwithstanding the fact that our association had presented testimony in 1956 we sought and obtained permission to testify again this year. Chairman Clyde McFarlin of our Employment Relations Committee, our witness, did an excellent job of portraying economic conditions surrounding the operations of the small telephone exchange. Drawing attention to the rate at which conversions to dial are going forward, he told the sub-committee that the small exchanges needed some additional leeway to work out their problem and that, given time, the exemption problem would disappear.

These three USITA officers are left to right, Hugh A. Barnhart of Rochester, Ind., first vice president; Clive W. Haas of Big Timber, Mont., president, and Clyde S. Bailey of Washington, D. C., executive vice president.

Mr. McFarlin also presented similar testimony at resumed hearings before the Kelley Sub-committee of the House Committee on Education and Labor. These hearings were still in progress when Congress adjourned. . . .

After Senate hearings ended Senator Kennedy introduced S.1853, a bill proposing a pretty complete revision of the Wage-Hour Act and contemplating the repeal or modification of many exemptions. It would revise our exemption in such a way as to make it apply only to "any switchboard operator who is providing telephone service through a telephone switchboard located in such operator's home."

The Kennedy bill was reported without recommendation by the sub-committee to the full Senate committee where it was resting when Congress adjourned. For reasons set forth at some length in a communication to the committee, we stated that the Kennedy proposal was unacceptable to us. We stated that it would be an unjustified dilution of the exemption as it now stands and that so far as many exchanges are concerned would completely remove the exemption. . . .

Bills to Increase the Minimum Wage. The last session of Congress also witnessed the introduction of a large number of bills to increase the minimum wage, most of them proposing $1.25, but several calling for $1.50. Neither Senate nor House committees held hearings on these measures. They confined their hearings to the subject of need for expansion of coverage. . . .

Bills to Increase the Securities Exemption. I am glad to be able to report that the Senate passed a bill last summer to increase to $500,000 (from $300,000) the amount of securities that may be issued in any year without observing the expensive, time-consuming registration requirements of the Securities and Exchange Commission. Bi-partisan support had been given this matter by the introduction of identical bills by Senators Thye (R., Minn.) and Sparkman (D., Ala.). President Eisenhower in his budget message in January had recommended the increase. At hearings before a sub-committee of the Senate Banking and Currency Committee our association along with other interested groups presented testimony in support. . . .

Bill to Repeal Highway Reimbursement Provisions. If Congressman Robert E. Jones of Alabama had his way the utility highway relocation cost reimbursement provisions of the 1956 Federal Aid Highway Act would be repealed. Mr. Jones has been one of the most ardent opponents of these provisions from the start.

In April of the current year he introduced a bill, H.R. 6987, virtually calling for their repeal. This measure would provide that no part of federal funds shall be used for the cost of relocation unless it is part of the cost of acquiring lands or interests in lands for right-of-way for the highway project. The bill would also provide that no utility shall be permitted within the right-of-way for any project except where the utility actually crosses highway rights-of-way. He also introduced another bill, H.R. 6988, to prohibit the use of federal funds in any state highway trust fund for utility reimbursement except for the purposes just described. . . .

The bills were referred to the House Committee on Public Works but were not given the dignity of a hearing. . . .

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Bills to Repeal Telephone Excise Taxes. Last November and December hearings on excise taxes including those on telephone service were held before a sub-committee of the House Ways and Means Committee. Many interests were represented. In support of repeal of the excise taxes on telephone service President W. C. Henry of the Northern Ohio Telephone Co., as the witness for our association, made a forceful, well-reasoned statement which received the close attention of sub-committee members. President Erskine N. White of the New England Telephone & Telegraph Co. also presented an excellent statement and likewise had good attention. . . .

No report has yet come out of the House committee, notwithstanding the fact that repeal of the discriminatory taxes on an item as essential as telephone service is long overdue. . . .

Excise Tax Administrative and Technical Revision Bill. Hearings were also held late last fall on a voluminous bill sponsored by the Treasury Department embodying a large number of administrative and technical changes in the tax code. The bill, supported by our association, passed the House in June of the current year but no action has yet been taken in the Senate. The bill contemplates a number of changes in communication excise tax regulations, including some in the definition of types of service.

The principal changes in definitions are as follows: (a) Redesignating "local telephone service" as "general telephone service"; (b) redesignating "long-distance telephone service" as "toll telephone service"; and (c) redesignating "leased wire, teletypewriter or talking circuit special service" as "teletypewriter exchange service" and "wire mileage service."

REA Interest Rates. Among other legislation introduced but not acted upon at the last session of Congress was S. 2427 by Senator Capehart (R., Ind.) and H.R. 4781 by Congressman Hiestand (R., Calif) to increase the interest rates on REA electric and telephone, as well as other government, loans in order to accord with the cost of money to the government. President Eisenhower in his budget message to Congress in January urged reexamination of these interest rates. The 2 per cent rate on REA loans has been in effect since this government agency came into being in 1936. When introducing his bill last summer, Senator Capehart said that the interest rate paid by the government on its borrowings at that time amounted to 3⅝ per cent. Current borrowings go as high as 4 per cent. . . .

Two TELEPHONY editors get together for a session during the convention—Francis X. Welch (right), Washington editor, and Harold B. McKay, Electronics editor.

Matters Before FCC

I now turn to the Federal Communications Commission and shall give a brief review of the activities of our association in matters and proceedings pending before it.

Increasingly we are having to interest ourselves in radio proceedings because of the growing importance of radio as an aid to telephone companies in carrying out their public service responsibilities and also because of the limited space in the radio spectrum and the scramble for frequencies by many conflicting groups. . . .

To assist us in effectively representing Independent company interests in radio proceedings and to keep in intimate touch with the developments in the radio art, our executive committee has authorized the addition to the association's Washington staff on a full-time basis of a qualified radio engineer.

The Big Microwave Case. Perhaps the most important FCC current radio proceeding to telephone companies is Docket 11866 involving the allocation of microwave frequencies in bands above 890 Mc. Among the 19 separately stated issues are the following:

What are present and future demands for frequencies, common carrier and private?

What effect would point-to-point authorizations have on common carrier ability to serve?

Does any obligation rest on the commission to protect common carrier service?

Would restriction of point-to-point private systems result in a lessening of competition or a fostering of monopoly in the manufacture, use or provision of facilities, contrary to the public interest?

To what extent will "contemplated" private point-to-point communication depend upon interconnection with common carrier facilities?

Are common carriers required to establish physical connections with private point-to-point carriers? If not, should the commission request jurisdiction over this subject from Congress?

It will be seen that the issues are far reaching and go to the very fundamentals of common carrier rights and obligations and the public policy which should prevail.

With many interests demanding opportunity to present their viewpoint, hearings in this proceeding began last May, were recessed for the summer and will resume in the fall. . . .

Our witnesses and those of the Bell System emphasized the constantly increasing need for radio frequencies in telephone operations, in order to meet the demands for inter-exchange, inter-office, public mobile, point-to-point rural, and subscriber private line systems communications channels. They stressed the public service nature of our business and the belief that maximum conservation of the radio spectrum will come not from allocating frequencies to large numbers of private users but from assigning them to telephone companies so that a communications service may be made available to the public generally at just and reasonable rates, under nondiscriminatory conditions and subject to public regulation by federal and state authority.

Emphasis was also given to the adverse effect upon the public and upon telephone common carriers themselves that would flow from assignment of frequencies to private users and a consequent skimming of traffic cream. The remaining traffic, it was pointed out, would have to bear higher rates in order to cushion the impact of revenue losses. Many private point-to-point communications entities such as gas, pipe line and electric companies have entered the field in a number of places and undertaken to provide their own intra-company communication service with frequencies obtained from the federal commission for the purpose.

The Lease-Maintenance Case: Is the public offering by telephone companies of private mobile communication systems furnished on a lease-maintenance basis subect to regulation under the ordinary regulatory statute? The California commission answered in the affirmative in a decision last January in a case involving tariffs covering such

a proposed service filed by the Pacific Telephone & Telegraph Co.

A similar question was presented to the FCC in March of this year when tariffs covering the same kind of an offering on an interstate basis were filed by the Bell System. In a formal proceeding instituted for the purpose, the commission suspended the tariffs pending a hearing as to their lawfulness and as to whether the contemplated arrangements constitute a common carrier service subject to its jurisdiction under the Communications Act.

As it is believed that some Independent telephone companies may now be furnishing service of this nature and that others may wish to do so in the future, our association has intervened in the proceeding in support of the acceptability of the tariffs as a common carrier offering. . . .

Interest of Department of Justice in Microwave and Lease-Maintenance Cases: Before the hearings began in the microwave case and after the Bell System filed its interstate lease-maintenance tariffs, the Department of Justice decided to advise the FCC of its views. In two letters to the chairman of the commission, Assistant Attorney General Victor R. Hansen, in charge of the anti-trust division, attempted to raise certain monopoly and anti-trust issues.

Respecting microwave assignments in Docket 11866, Mr. Hansen expressed the opinion that Section 314 of the Communications Act shows a congressional intent to rely upon competition to regulate and develop the communications field to the greatest possible extent, and that there is nothing in the act to indicate that any particular portion of the spectrum should be turned over to common carriers.

In the lease-maintenance case, Mr. Hansen referred to the consent decree in the American Telephone & Telegraph Co. and Western Electric anti-trust case and stated that the decree sought to limit the AT&T and its operating subsidiaries to common carrier communication services. He stated that approval of the proposed tariffs "might substantially lessen the competition which now exists in the leasing, as well as in the manufacture and sale, of equipment for use in private communication systems." He also stated that in the event of approval the anti-trust division "would be forced to consider most seriously appropriate action under the AT&T (consent decree) judgment."

There is apparently a view within the anti-trust division that private point-to-point communication systems constitute a new industry and should be given an opportunity to grow and develop. In intervening in the lease-maintenance case our association of course is not directly concerned with the question whether the before-mentioned consent decree would be violated in any way. But it is interested in the principle of protecting the right of common carrier telephone companies to provide a comprehensive communication service for all who desire it, at proper rates and subject to public regulation.

Left to right, George E. Richert of Washington, D. C., H. A. Cunningham of Albany, N. Y.; L. W. Cleveland of Lincoln, Neb., and R. E. Coffman of Marion, O.

Other FCC Radio Proceedings: The following is a summary of other radio proceedings pending before the FCC in which our association is taking an interest:

(1) Our association filed comments in Docket 11990 in opposition to a proposal to establish a new Local Government Radio Service with eligibility for states, cities, towns, territories, possessions and other governmental subdivisions to transmit by radio all types of essential administrative and emergency messages.

The editor snapped this shot so that Ray Blain (left) our technical editorial director and official convention photographer could have his picture in the convention issue. On the right is A. J. Stults, TELEPHONY vice president and advertising manager.

(2) Our association filed comments in Docket 11991 in support of a proposal to allocate five pairs of frequencies in the 450-460 Mc band in a new Utilities Radio Service for use by telephone companies to serve their own construction and maintenance vehicles. Telephone companies may now use frequencies for this purpose only when they are willing at the same time to incur the added expense of making a public offering of Public Mobile Radio Service and have demonstrated they have made reasonable effort to develop a need for it in their territory.

In September 1956 the commission in Docket 11435 amended its rules governing operations in the Power Radio Service to provide three pairs of frequencies in the 450-460 Mc band for use by telephone companies on a shared basis for construction and maintenance purposes. The following month the commission stayed the effective date of the order. Our association in December filed a petition to vacate the stay order. While stating it recognized the ". . . inherent need of the telephone industry for a number of exclusive channels," the commission decided to terminate the proceeding. Later, however, in still another proceeding, Docket 11991, the commission proposed to allocate five pairs of frequencies for use by Independent telephone companies for construction and maintenance purposes.

Also, in Docket 11991 we opposed a proposal to establish a new Business Radio Service to permit business firms to establish radio systems to meet their own communication needs. This was on the ground that Independent telephone companies would be deprived of needed revenues and that their ability to improve and expand their service to the general public would be impaired.

(3) Our association filed comments in Docket 11995 in support of a proposal to allocate on an exclusive or primary basis additional frequencies below 890 Mc for use by telephone companies to provide Mobile Radio Service, rural subscriber, and inter-exchange point-to-point facilities.

(4) Our association is preparing comments in response to a Commission Order of Inquiry in Docket 11997. This inquiry contemplates a review of the

(Please turn to page 128)

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Common Goals For Changing Times

*By FREDERICK R. KAPPEL**

IT IS A great honor to be here and I appreciate it very much. However, I'd say it was something much more important than an honor. This industry of ours has work to do, and goals to reach, that are extremely important to the nation. It is up to us to provide the very best in communication service, and to equip ourselves physically and financially, as well as with all the human skills we need, to accomplish the most we can in the public interest. And, I think that in inviting me here today, you are saying in effect that to do these things, we in the telephone industry must get together, think together, and plan and work together. In fact, I'm sure that is why you asked me. You can be just as sure it is why I came.

I congratulate the USITA and all its members on 60 years of progress. You have played a vital part in the total accomplishment of the industry and you are certainly doing so today. No one could say this more sincerely than I do.

The way things are going nowadays, however, none of us has much time to be looking back. The future isn't waiting for us. It's rushing right at us. This country is growing faster than anyone could have believed a few years ago. Along with the growth, people are moving around and changing their ways of living and also their ways of working. And, all this moving and changing tends to make communications continuously more important to more people.

That's half the story. The other half is that we who provide communication service have more and more to offer. We're getting an assortment of tools to work with that are almost beyond belief. New instruments, new switching, new transmission systems—these are producing all kinds of new possibilities in service.

Today and tomorrow our industry can provide ever-increasing convenience in communications. More and more we can tailor-make our voice services to meet individual needs and tastes. In addition, teletypewriter service can do a growing variety of jobs. We're putting in circuits and developing equipment to handle great volumes of high-speed data communications. We also have the prospect of providing picture channels for many purposes, in addition to networks for television broadcasting.

In short, I'd say the future offers opportunity unlimited. But in the same breath I'd also say we have new responsibilities to match.

What does it mean, for instance, that the telephone companies of the nation can offer their customers a broader range of services and a wide choice of instruments?

For the folks we are serving, naturally it means they are more free than ever before to look the situation over and pick out what suits their particular needs and tastes.

This is fine and as it should be. But let's not forget that giving the customer this range of choice means first of all that we have more decisions to make ourselves. It means, too, that we assume greater risks. The first important fact about every new service and every improvement of service is that it calls for good, sound, management judgment on our part.

If we're going to answer more needs, first we shall have to answer more questions—questions like these:

How broad is the market? How fast shall we build for it? How much investment will be needed? How do we best promote and sell the service? And over and over and over again—as we grow, and as our risks increase—how do we make sure that we grow at a profit?

So, my first thought is simply this:

We have a tremendous future in this telephone industry, but it isn't going to be realized on technology alone. Transistors and computers and wave guides and all these things the scientists discover are wonderful. We couldn't do without them. However, they are not Aladdin's lamps. We can't just rub a transistor and make a wish and expect it to come true. The fact is that to take advantage of our new communication tools—to realize all the wonderful opportunities they open up—requires us, as managers, to do a better job of managing than we have ever done before.

I'm sure, too, that the great changes which are taking place, both outside and inside the industry, will closely affect every one of us. Nobody is immune to progress. This may be disconcerting at times, but we had better accept it. Nowadays, jet planes don't wind their vapor trails through any particular part of the sky. The man with the oil drill may turn up almost anywhere, and the woods are full of highway surveyors. I don't mean that every hamlet is going to be a suburb, or every pasture a factory branch. But, there aren't very many places that come with a no-change guarantee. In the world we live in today, most anything can happen, anytime, anywhere.

And, this it seems to me is crystal clear: We in the telephone business must meet these changes together, for ours is one single industry and our

*Mr. Kappel is President of the American Telephone & Telegraph Co.

service is indivisible. Far more than in other types of business, the progress we make depends on how effectively we combine our efforts.

I think this has been growing on all of us year by year. At any rate, it has been growing on me and I certainly hope it has on you. The basic reason is plain and simple: None of us can serve the community and the country well without the help of others. None of us in the long run can prosper, unless jointly and together we accomplish a fine service job. All of us need each other's cooperation in order to succeed.

As time goes along this situation tends to become more pronounced, rather than less. Distance dialing is one of the factors, but only one. In more and more places we live and work in each other's laps. We mesh closer and closer together. When big customers want special services, we must jointly provide them. We share rate problems and directory problems, as well as service operating problems.

Now, I'm not going into a lot of detail on this subject. You know the details anyway. The big thing is that we're all working on the same job and to do it well we must cooperate, and I think we are. I think we're working together better than we ever have before, and I don't see any reason why that shouldn't continue.

Of course, most of us are all in favor of cooperation when it means having the other fellow do things our way. We all like that. But in real life we usually have to settle for something less. It's a matter of give and take. No one can cooperate with a stiff neck. We have to bend a little. On the other hand, being anxious to cooperate doesn't mean that anybody ought to give the other fellow his shirt, either. I guess no one in this business expects anything along that line. But, we can always meet with good-will and in good spirit, and work out common problems on a sound business basis. I have full confidence that we shall continue to do exactly that.

Anyway, that's what we're going to have to do, because this country needs a big, growing, unified, common carrier telephone system—one that will always be ready for any job. It must be strong in its people, strong in technology, and strong financially. And, all these assets, as I've said, we must employ throughout the industry so that we meet—together—this fascinating challenge of providing more service and improved service and entirely new services as our customers want them; doing this in a way that mixes all the skills of marketing, financing, engineering and operating—so that we go as fast as we should but not faster, and give the public the most we can while at the same time we earn enough to make still more progress possible.

Left to right, R. D. Heusel of New York City; L. O. Evenson of San Angelo, Tex., E. L. Evenson of Dallas, Pa., and Harlan Goble of Covington, O.

With that sort of goal in mind, I'd like to say a little now about a few specific problems of our industry—problems that are impotrant to us all.

One of them is this matter of competition. It seems there are quite a few non-communication companies today that would like to provide a considerable part of their communications themselves, without depending on the common carriers. In particular they want to build private microwave radio systems and are asking the FCC for permission to do so.

Of course, this goes against the basic principles and experience which have shown that the public interest depends on common carrier service. Indiscriminate licensing of non-common carriers to build their own systems would not only sacrifice the most efficient use of the radio spectrum; it could very seriously interefere with the ability of the telephone companies to serve the public at reasonable prices. Thus, any possible advantage to non-common carrier licensees would only be obtained at the expense of the general public. I realize that right-of-way companies and public safety organizations may have some need for private systems, but these are special cases.

C. M. Bell (left) of Chester, S. C., and T. Carter Thomasson of Lancaster, S. C.

Our industry position is clear and sound. Both your people and ours have stated it, but we all need to keep on talking it to be certain that others know and fully understand it. We are sure common carrier service results in lower costs to the public. We are confident it also makes possible much more efficient use of the radio spectrum. We know a strong common carrier network is a much greater asset in time of emergency or war than a fragmentized hodge-podge of private systems could ever be.

Today, I only want to add this comment:

In the long run the public will approve a decision in our favor, not on the basis of hearing-room testimony, but on the basis of how well we in the telephone companies jointly succeed in providing the services our customers want.

Here is another matter that seems to me to concern the whole industry:

What do the people who are working in this business really know and believe about the outfits they are working for?

That depends mostly on how diligent the companies are to give employes the facts, and on how well we succeed in demonstrating our sincerity.

I'm sure we *must* succeed in this, for if most of the things employes know, or think they know, should come from some of the union papers and union press releases I see, they will certainly get some strange ideas.

For instance, I saw a union editorial the other day that had the Bell System waxing rich and practically choking on fat profits. This kind of thing is so absurd, you may wonder why I even mention it. The reason is that the problems which unions and managements are concerned with are so important, not only to them, but to the public and the nation as a whole, that

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there just isn't any room for careless or misleading talk.

You and I know that the telephone companies are bound to provide wages and working conditions that compare favorably with other industry and offer attractive opportunity for willing and industrious men and women. We can't make progress in any other way. I'm simply saying here that the need to accomplish the best for all concerned —for employes, for customers, and for investors—absolutely requires a thoughtful and factual approach. Nothing else will do. Frivolous and unconsidered statements can only cause harm—the more so if by silence we seem to give our consent. What we need is to get such a steady stream of truth flowing that there's no room in the river for anything else.

Another big industry-wide job is to get enough earnings. Telephone service has been a low-earning enterprise now for a long time. It ought not to be. To be sure, we've improved—at least most companies have improved—quite a bit in recent years. But most of us still have quite a way to go. I also think that to go that distance we need to keep hammering at a basic idea.

This is that in the long run, good earnings mean better service at lower rates. A large segment of the public and too many of the commissions have quite a different idea today. They seem to think low earnings mean low rates and good earnings mean high rates. It is this climate that has made us a low-earning business in the postwar period.

Can the climate be changed? I certainly think it can. The public today has no idea that the lowest-earning soap company makes the best and cheapest soap, or the lowest-earning automobile company the best and cheapest automobiles, or the lowest-earning meat-packer the best and cheapest hams.

Why should we let the idea hang on that the low-earning telephone company gives the best and cheapest service? We know it isn't so and we also know that people don't have this idea about other kinds of businesses. Why should they keep this false notion about us?

The fact is, and I know this is repetition, that good earnings mean quality service at lower cost to the user. And good service is much more important to our customers than the precise rate they pay.

We simply must show the commissions and the public that the only way to telephone progress is through telephone prosperity. As I said at the start, we have tremendous new opportunities to provide improvements in service and a great variety of new services. These will add to the convenience and comfort of men and women everywhere. They will help other businesses and make a very large further contribution to the progress of our national economy. But, all this potential achievement depends on our earning well.

We must raise capital in huge amounts. We must continue to push research and development work. We must take new and substantial risks. We must not merely keep, we must enlarge and deepen the respect and faith and trust of people who have money to invest—both those who have already bought our securities and those who have never done so before.

Is it asking too much of regulatory commissions to exercise, in fullest measure, their practical judgment, their imagination, and their political courage? I am sure it is not. And, I am especially sure of this when I reflect that the problems which confront the regulator when a business is successful, and can go ahead progressively from one achievement to another, are as nothing compared with the problems which confront him when a business doesn't have the money to do what ought to be done.

Today, in many states, we see a glaring inconsistency. Their efforts to encourage and attract new industry are very different from the consideration they give to our industry which is already there. Do they really expect to attract others and bring employment and prosperity up, while at the same time they regulate telephone expansion and employment down? I cannot believe it. It is our job to demonstrate that every state needs our financial good health, not only for what this means in direct telephone employment and wages, but equally, or even more, for what we can do to help make the state attractive to others. One of the first things any industry wants to be sure of is that it can count on full and fine service from us.

I have only one other specific matter to mention which seems to me of top importance.

With a tremendous service job ahead—

With lots of competition all around us—

With the need to better our earnings—

With the continuing challenge of dealing with the unions in ways that will be fair to employes, fair to the public, and fair to the share owners—

With this kind of future, it seems to me it is a plain necessity that we do the very best we can to help build our future telephone management.

This is a many-sided matter. It is not something for which we can find a formula. Nor is this a job that some of us can work at and others leave alone. It is the responsibility of every boss in the business.

I put it that way because the great essential is to have the kind of working atmosphere in this business that gives people air and room and freedom and incentive to grow. And, it is the boss—all bosses together—who determine that atmosphere.

Throughout the industry we are doing many things to try to aid the process of growth. We are broadening engineering training. We are using conferences, case studies, discussions and courses of various kinds to broaden the knowledge and outlook of our people.

But, in my judgment, all these activities, valuable as they may be, can only be effective as aids to growth in the right kind of climate—and for that the boss is everlastingly responsible. We'll do the best job, I'm sure, when —and only when—every boss acts on the understanding that an indispensable part of his assignment is to do everything he thoughtfully and reasonably can to encourage the growth of his subordinates.

Perhaps you will agree that these broad industry problems I've been discussing make quite a handful. We have a real job ahead of us. But in closing, I'd like to express again my complete confidence in the forward motion of this business. The longer we go, the greater the promise of the future seems to be.

You in this association can now look back on 60 years of progress, and I congratulate you again on that. However, you don't need to look anywhere near that far to be conscious of great achievement. What you have brought about in the last decade alone ought to make you feel pretty good. And, in the years to come, you must be well aware that the very nature of this country's growth, and the kinds of changes that are in the making, give you spectacular opportunities.

Yet I'd rather end on this note—that the job ahead is not partly for you to do, and partly for us in the Bell System to do, but rather that all of the job is ours to do together. For it is the kind of service that grows out of this concept that the public will surely insist on, and we must surely deliver. I'm confident we're going to do it, and our being here together this afternoon is further evidence that you have the same idea.

Clouds Over Telephone Fair Return

*By JOHN F. CHILDS**

AMONG the many responsibilities of the management of a utility company is the obligation to treat fairly three groups—Consumers, Employes, Investors.

Treating investors fairly is one of management's most difficult undertakings and one of the most important. It is this problem which I will discuss.

Most of my comments apply to the entire utility industry, but the telephone industry has some special features which add to the difficulty of the problem.

It is the ingenious use of capital that has made labor productive, and accounted for our high standard of living. Without capital, we would be back in the horse and buggy days. Too many people have lost sight of this fact. Too many people are inclined to feel that capital, finance, Wall Street, etc., are to be looked upon with great suspicion. There is little excuse for such an attitude to persist, for today almost everyone helps supply capital either indirectly through pension plans, life insurance, savings banks, investment companies, etc., or directly through the growing ownership of common stock by the small investors.

And, obviously, it will be equally beneficial to consumers and employes as well if investors are accorded the fair treatment. This is particularly important to the utility industry, because it is one of the largest users of capital. Few other industries require from $3.00 to $4.00 of capital per $1.00 of annual operating revenues.

Problems

Why is fair treatment for investors such a difficult task? For many reasons. Let me name a few of them.

(1) *The prejudice of the consumers.* As far as the consumers of utility service are concerned you are a monopoly. The characteristic of your industry requires that you operate as a monopoly; there is nothing wrong with it. However, this characteristic has a very unfavorable effect on your consumer reaction.

In America, with our independent nature, our freedom, etc., consumers don't like monopolies. For most other types of purchases, such as cars, washing machines, food, etc., the consumers can switch from one company to another if they become dissatisfied. But there is no way to vent their feelings if they don't like utility bills. These bills are like tax assessments. Moreover, consumers just don't know that they are more than well protected by regulatory commissions. Surveys have shown this to be a fact. Thus, you have an inherent prejudice which tends to build consumer ill-will. Furthermore, in the 1929 era, some segments of industry indulged in financial practices which no one can ever condone. That was a very serious blow to all of industry from a public relations angle. Unquestionably, such practices have long been eliminated and most of industry is largely "lily white" today. The 1929 mistakes, however, have not been entirely forgotten throughout the country and an element of suspicion still exists in some quarters.

Unfortunately, a sufficient number of the consumers don't realize that utility rates are actually cheap and are, in fact, among the few items which have not skyrocketed in price as a result of postwar inflation.

(2) *The press.* Consumer prejudice is aggravated by the fact that the press, through no direct fault of its own, often makes things more difficult. Utility rate increases are usually announced in the newspapers with blatant headlines in terms of millions of dollars. Actually, the rate increases amount to only a few cents per month per consumer. But that fact is buried in the story. Yet, when there are increases in prices of all other types of goods, they are almost always reported in headlines as so many cents per pounds, or per ton, etc. The figures never sound big. Actually, if multiplied by the pounds or tons etc., consumed, the end results would make rate increases by utility companies look small.

(3) *Regulation.* Regulation has a difficult job to do, very difficult. Commissions are usually understaffed and the pay is just not commensurate with the responsibility they carry. I have the highest regard for people in regulation. Most of them are attempting to do a sincere, honest and conscientious job.

However, there are some commissioners who either don't know or don't want to know, or yield to political pressure, and always decide everything in the immediate favor of the consumers. In fact, I can remember a utility commissioner telling me that it was his duty to protect the consumers —let the management worry about the investors. However, there isn't any possibility that the investors will be treated fairly under such circumstances. It is regulation that determines the earnings of utilities, and how can investors be treated fairly if regulation refuses to take seriously the investors' problem. Obviously, there isn't a chance under such unenlightened thinking.

This element is frequently magnified by the fact the regulators are either appointed by elected officials or are elected themselves. This adds the factor of political pressure, if politicians choose to take advantage of the consumers natural prejudice, and

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makes it difficult for regulation to function as a free judicial body.

(4) *Difficulty of proof.* All of the obstacles mentioned above would not be so serious, if the matter of proving what a fair return should be was a cut-and-dried proposition understandable to everyone. This is not the situation. It is, in fact, a most difficult and involved problem for the following reasons:

(a) Proof of a fair return necessitates much testimony and statistics. Furthermore, it is impossible to find statistics in most cases which by themselves prove what a fair return should be.

(b) As with all problems of finance, judgment is essential in interpreting the statistics. But the use of judgment, and allowances based thereon, is looked upon with grave mistrust by those who are not familiar with finance.

Judgment must be applied in many places, such as determining a proper capital structure, dividend payout, underpricing allowance for common stock offerings, cost rate for common using expected or future earnings, and, above all, the need to allow something above cost-of-capital in order to get a fair rate of return. There are many reasons for this allowance which I will not go into here.

(c) Some witnesses who oppose the companies rely almost entirely on a statistical, mathematical approach, which on the surface seems simple and understandable. Their serious fallacies can only be understood readily by someone who has been steeped in the subject or who is willing to spend tedious hours trying to fathom their full significance.

(d) I said at the start that there were some special problems faced by the telephone industry. Foremost of these is the fact that so many people, both in and out of regulation, are under the impression that the telephone industry should earn no more than the electric industry. In other words, your rate of return is held down by what applies to the electric industry. Certainly any fair analysis of the situation would reveal that your industry is much more risky and deserves a higher rate of return.

Investors appraising the relative merits of an electric company as compared with a telephone operation would analyze not only comparative past results but would also consider the potential risks involved. I have attempted to stress this time and time again, but with limited success. I have decided now to use a new approach. Let me try it on you. I call it my "Nightmare Exhibit."

Let us assume that each of you is president of an electric company and that you went to bed one night and had a bad dream. You dreamt your electric company was suddenly transformed into a telephone company and that as this change occurred you visualized the following:

First, all of the many customer appliances which make up your great diversified load are turned into just one appliance, the telephone. Your diversification is lost and your vast prospects for load building are constricted, because instead of having the hundreds of manufacturers and thousands and thousands of dealers building your load, you alone now have to promote what you have left.

Second, your wage bill which represents 20 per cent of your electric operating revenues soars to over 40 per cent and you lose the advantage of the part of your expenses represented by fuel costs which automatically goes off, if your load falls, and which is partly protected against inflation by fuel adjustment clauses.

Third, instead of being in a decreasing cost business, you are switched into the spider web situation of increasing costs.

At this point, you wake up in a cold sweat and realize that fortunately it has been just a bad dream. However, sound logic must compel you to say that you certainly would want a higher rate of return if your electric company did become a telephone company, in order to allow for the less attractive nature of the business.

(e) Then there is the "small company" problem which many of you represent. A small company unquestionably has to pay higher rates for capital than a large one. And, consequently, such companies must receive a higher fair return. If this is not recognized, the smaller companies will be forced out of existence.

(5) *Rate base.* Since we have had a serious inflation, the rate base is of particular importance. Fair treatment to investors requires an allowance for the inflation factor through the rate base. Some jurisdictions today still cling to original cost.

Unfortunately, the history of utilities has witnessed an opportunistic switching back and forth from original cost to an allowance for reproduction cost and vice versa, whichever suited regulation or the companies best at the particular time. This has certainly helped to make the problem a difficult one today.

(6) *Whole problem highlighted today.* At times, the occasion may arise when a utility may have to consider reducing rates, if its rate of return remains too high. Management must take a constructive approach with regulation when such a situation develops. However, let me stress that such a happy earnings situation does not exist today.

Under present inflation, this whole problem of fair treatment to investors is highlighted, with expenses continuing to spiral and rate of return sliding downward. Furthermore, interest rates which are a part of the cost-of-capital have increased substantially within the past year. Inflation and higher interest rates require rate increases.

Thus, there is undoubtedly going to be a greater need for rate increases in the future. In seeking to obtain those rate increases, the cards are stacked against the telephone company. Many clouds darken the prospect of a company's efforts to treat the investors fairly.

Solution

There is no easy and quick solution. The problem must be attacked from all angles in a vigorous way. It will require endless work on the part of management and right on down through the entire organization of every utility along the following lines:

(1) Excellent service. All my remarks presuppose that every utility company has as its goal the provision of excellent service. If not, there is little hope that any other efforts to solve this problem will be of any avail.

(2) Public relations and education. As yet, the public just doesn't understand your problems and, in particular, this matter of fair treatment for investors. You have got to double and triple your expenditures on public relations and education at all levels and through many media.

This, of course, implies a thorough educational and training program for your employes, who are your front line salesmen.

Your public relations must also encompass some effort to get a better story to your customers through the press. No one is directly to blame for this obstacle, but it is a serious one.

With regard to public relations in general, I might add that regulation is quite sensitive to your public relations, and rightly so. Their job is made much easier if your outreach to the public is good.

(3) Every utility company should work continuously with regulation in order to build a sound relationship over the long-run and not just during a rate proceeding. You have got to approach the problem fully recognizing that regulation has a very tough job to do.

(4) I stressed the difficulty of proof of a fair return. Much more work is required on the part of the industry in this respect. It should be looked upon as an ever present job and not one to be tackled just when a rate case arises. Such an approach is bound to lead to errors which will cause irreparable damage.

Conclusion

In conclusion, let me say that I am not overlooking what your team of management and employes has done to provide a marvelous communication system for our country. This has been a superior achievement. However, I do not hesitate to emphasize that yours can't be a healthy industry for the investors or for the consumers, unless you are kept financially healthy. And this requires fair treatment to the investors who put up the capital. I sincerely believe that the problem is sufficiently urgent to require much more effort on your part in many different directions.

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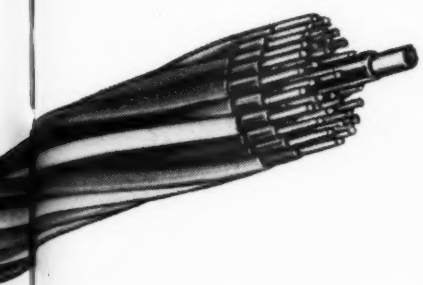

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Report of USITA Accounting Committee

*By O. M. WESTRUP**
Chairman

IN ITS report to you last year, your Accounting Committee called attention to some fairly important landmarks in the form of changes in the Uniform System of Accounts for Telephone Companies Class A and Class B. High in importance among the changes is the one which deals with accounting for station apparatus, station installations, and station wiring.

Station Accounting

The changes were ordered by the Federal Communications Commission only after having been under study for several years by this association's Accounting Committee, industry representatives and members of the commission's staff. The committee has also reviewed and submitted to the commission comments concerning proposed changes in the annual report form occasioned by the revised accounting rules.

The current year has been characterized by a period of planning and study in order to implement the new rules. Since many companies will be faced with the necessity of making the changes in accounting for station equipment accounts effective Jan. 1, 1958, it seems appropriate to include in our report an account of the changes which may be summarized as follows:

(A) *Consolidation of Certain Plant Accounts.*

(1) Combine Accounts 232 (Station Installations) and 233 (Drop and Block Wires) into a new Account 232 titled Station Connections.

(2) Transfer small and miscellaneous PBX's from Account 234 (Private Branch Exchanges) to Accounts 231 (Station Apparatus) and 232 (Station Connections). Retain large dial and multiple manual PBX's in Account 234.

(3) Eliminate Account 235 (Booths and Special Fittings); transfer amounts to Accounts 231 (Station Apparatus) and 232 (Station Connections) with furniture items going to Account 261 (Furniture and Office Equipment).

(B) *Crade-to-Grave Accounting for Station Apparatus.*

(1) Charge new Station apparatus to Account 231 (Station Apparatus) at time of acquisition where it will remain for its entire service life. (Prior practice was to charge newly acquired station apparatus to Account 122 (Materials and Supplies). It was charged to Account 231 during the time it was installed on a customer's premises and was salvaged to Account 122 on each removal.)

(2) Charge supply expense associated with reused station apparatus to Account 605 (Repairs of Station Equipment).

(C) *Classifications of Station Connections as Depreciable Property.*

(1) Classify new Account 232 (Station Connections) as depreciable property.

(2) Charge the cost of all work on inward station movement (new installs, reinstalls and reconnects) to new Account 232 and the cost of work on outward movements (removals and disconnections) to Account 171 (Depreciation Reserve).

(3) Charge Account 171 (Depreciation Reserve) with the investment retired from Account 232 (Station Connections), less the recovered investment reused in the accounting period.

(4) Abolish the maintenance Account 607 (Station Removals and Changes).

Since the revised rules will become effective Jan. 1, 1958, the committee considers the topics a timely one for the 1957 Accounting Conference. Mr. Robert Stromberg, chief of the Office of Accounting Systems, Common Carrier Bureau, of the Federal Communications Commission, can be expected to comment on these changes when he addresses the conference on the subject "Recent Changes in FCC Accounting." Some companies undoubtedly have elected to make the changes effective Jan. 1, 1957, under the permissive section of the commission's order. For them it has meant a head start in getting the new methods in operation and an opportunity to capitalize on the savings in clerical work which is expected to follow.

Change in Accounting

Closely related to and stemming from the foregoing is the question of whether or not Treasury Department approval will be required if the revised accounting methods are employed in computing net income for federal income tax purposes. Items under A and B above are merely reclassification and refinements which do not constitute changes of accounting method within the meaning of Section 446 (e) of the Internal Revenue Code.

The treatment of station connections as outlined in paragraph C, however, constitutes a change from retirement accounting to depreciation accounting, and it is the adoption of this change for federal income tax purposes that gives rise to the question. Thus far the Treasury Department has given no indication that it will approve the change in accounting method except upon the request of individual tax payers.

The American Telephone & Telegraph Co. and some of the larger Independent telephone companies have

*Mr. Westrup is Vice President of Illinois Consolidated Telephone Co. of Mattoon, Ill.

done considerable work and have furnished to the Treasury Department certain data in support of their requests. A decision on those requests is now being awaited. It is hoped that the Treasury Department will approve the change in accounting as prescribed by recognized federal governmental authority and that the many Independent telephone companies will not be unduly burdened with the preparation of elaborate studies or required to keep different accounts for federal income tax purposes than those prescribed for regulatory purposes. Meanwhile, companies making the change would be well advised to request Treasury Department approval in order to avoid possible disallowance of deductions claimed for income tax purposes.

Accelerated Depreciation

The so-called liberalized methods of computing depreciation for income tax purposes which came with enactment of the 1954 Internal Revenue Code are still a matter of important concern to many. The topic was featured on the 1955 and 1956 Accounting Conference programs and, therefore, it is not being repeated at this time. The Federal Communications Commission has issued a notice of proposed rule making with reference to the accounting for income tax differentials arising out of the use of accelerated depreciation. The association's Accounting Committee responded to a request from the commission for comments concerning the proposed accounting, and its decision is now being awaited.

Economic Depreciation

Likewise, on the subject of depreciation, it should be noted that the committee has not been unmindful of the effects of inflation and the failure of conventional accounting techniques to measure true costs in terms of present-day dollars. Accounting for depreciation on a strict original cost basis has come in for considerable criticism because of this fact. The same is true of other accounts which are likewise affected by the devalued dollar. Nevertheless, there seems to be a fairly general area of agreement on the point that cost is still the best common denominator for accounting purposes, and that it would not be practical to depart from the cost basis as a basic accounting principle.

This suggests, of course, that financial results, if they are to reflect inflationary costs, must be supplemented by additional information. While reports employing this feature are still somewhat in the minority, they give rise to some rather interesting questions. A desirable result, if it could be accomplished, would be a change in regulatory practices which would permit an increase in utilities' earnings and possibly a change in tax laws allowing economic depreciation as a tax deduction.

Left to right, W. N. Scholl of Bloomington, Ill.; R. S. McClelland of Galatin, Mo.; Paul Lackey of London, Ky., and R. T. Rayborn of Springfield, Ill.

On the other hand, there is the question of whether or not a company's credit rating and ability to secure expansion funds might be jeopardized if by reporting economic depreciation it exposes to public view a substantial reduction in its earnings. These are questions which each company will want to consider before adopting any such change in its financial reporting procedure.

H. D. Fargo Jr., president of TELEPHONY, chats about the telephone business in Japan with Takeo Yoshizawa, director of business operations bureau, Nippon Telephone & Telegraph Public Corp. of Tokyo, Japan. Mr. Yoshizawa is a member of a 10-man mission from Japan visiting American telephone organizations.

While the proponents of economic depreciation appear to have strong support, general agreement on the subject still appears to be essentially lacking. For this reason, the Accounting Committee has not undertaken to formulate a recommendation other than to continue by educational means its efforts to keep the Independent segment of the telephone industry adequately informed as to the consequences of inflation.

Other utility groups have prepared reports on the subject of economic depreciation for distribution to their members. These reports have been characterized as being in the nature of text book material designed for enlightenment on the subject but without specific recommendation for its adoption. A film presentation, "Inflation in Business," which is featured on the program for this year's Accounting Conference will serve to focus attention on this very important matter. It should be of interest not only to utility management but to regulatory authorities as well.

Statistical Volume

The type of information contained in the (USITA) annual statistical volume and the form in which it is presented is now the responsibility of the Accounting Committee. We hasten to add, however, that we must have not only the help and cooperation of reporting companies in supplying information for the volume but your comments and suggestions for improving the work as well. Keeping the volume abreast of changing times and conditions will be the continuing responsibility of this committee. To this end, we solicit your comments and suggestions. Please communicate them to the Washington Office of the association.

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Recent Changes in FCC Accounting

*By ROBERT E. STROMBERG**

(An Accounting Conference Address)

AS AN introduction to my subject, a brief explanation of how the FCC goes about amending its telephone systems of accounts may be of interest. If an amendment is requested by formal petition it is normally made the subject of rule-making proceedings as a mater of course. This results in the proposal being mailed to all state public utility commissions and to all telephone companies subject to the accounting jurisdiction of FCC. The proposal is published in the *Federal Register*, which is legally constructive notice to all members of the public of the proposal. Accordingly, anyone may submit comments.

I understand that USITA members are advised of proposed amendments through bulletins from the Washington headquarters and that the Accounting Committee of the association reviews proposals and makes recommendations as to whether comments should be filed. After the comments are all in they are considered and the commission decides the question. If an amendment of any real consequence is proposed on the commission's own motion it will ordinarily have been discussed informally with the Committee on Accounts of the National Association of Railroad and Utilities Commissioners (NARUC) and with the Bell System and the USITA before being made the subject of rule-making proceedings. From there on the course is the same as just described for proceedings commenced as the result of a formal petition.

What are probably the most far-reaching amendments made in FCC accounting rules for Class A and Class B telephone companies since the presently effective uniform system of accounts for such companies was promulgated in 1937, were adopted on Sept. 19, 1956. These amendments relate to the accounting for station equipment together with the associated labor and wiring costs. The amendments were mandatory on all Class A and Class B companies subject to the accounting jurisdiction of the FCC, effective Jan. 1, 1958, with a proviso that any company that so wished could make the amendments effective as of Jan. 1, 1957. The amended station equipment accounting rules involve a radical departure from long-established accounting procedures and I wish to congratulate those of you who succeeded in putting them into effect in your companies in the relatively short time between the date the amendments were adopted and the beginning of this year. No doubt many of you are still struggling with some of the ramifications encountered.

These amendments are the principal subject on which I will talk today. As you no doubt remember, Robert Buzzard of one of the member companies of your association presented a most informative paper on this subject under the title "Simplified Station Accounting" before the Accounting Conference last year. He was an excellent choice to discuss the subject inasmuch as he served as chairman of the special committee of your association that considered the proposed changes and also participated in the conferences and preliminary studies which preceded the rule changes.

The commission is indebted to Mr. Buzzard and others of your association who collaborated with the commission's staff, the NARUC and the Bell System in bringing this rule change project to a successful conclusion. It would not have been possible to have performed as thorough a job or to have completed the work in time to make it possible for many companies to make the new procedures effective at the beginning of this year without the full cooperation of the entire telephone industry.

Please forgive me if I cover some of the material discussed by Mr. Buzzard. This subject should bear some repetition and, to some of you who have been struggling to make the required changes in accounting and procedures, it should now have more meaning than when you were first confronted with the changes in the rules.

As many of you know, the revised station accounting did not come about over night. A tremendous amount of effort went into the preliminary work which was performed before formal rule-making procedure was instituted. For many years the FCC, the NARUC, and many in the industry have been interested in methods of improving and simplifying accounting and field reporting for station equipment as well as getting a better allocation of expenses by years than was being obtained under existing procedures. These procedures provided that charges to operating expenses covering station wiring and installation costs were delayed until telephones were physically removed from subscriber premises.

Back in the twenties the Interstate Commerce Commission considered whether or not station installations and drop and block wires should be made depreciable accounts. It decided against it for the stated reason, among others, that subscriber's moves and changes come so regularly and at such short intervals that the cost thereof is relatively constant month by month, and the individual amounts are so small that their inclusion in maintenance

*Mr. Stromberg is Chief, Office of Accounting Systems, Common Carrier Bureau of the Federal Communications Commission.

does not distort maintenance comparative figures.

The validity of this conclusion was no doubt brought into question by telephone company experience during the great depression of the early thirties. In any event, as early as 1938, the NARUC raised the question as to why station installations and drop and block wires should not be made depreciable and the FCC addressed letters to your association, as well as to the Bell System, asking for your views on the matter. The replies received by the FCC indicated opposition to any change at that time. Detailed studies were requested of the industry as to actual retirements charged to account 607, "Station Removals and Changes," and certain other data recorded under the existing accounting.

No revisions were made in the required accounting at that time so far as Class A and Class B telephone companies were concerned. However, when the FCC issued a revised uniform system of accounts for Class C telephone companies, effective Jan. 1, 1939, it was provided therein that account 1032, "Station Wiring," should be depreciable although the cost of removal and of reinstalling station apparatus, inside wires and drop and block wires continued to be chargeable to maintenance expense.

In 1954, the New York Public Service Commission took advantage of the opportunity afforded by the issuance of a rate case decision involving the New York Telephone Co., to publicly condemn net wiring loss accounting. It described it as an archaic accounting practice which tends to compound or exaggerate the effect upon earnings of either a business depression or a business boom.

As you will have gathered from what I have just said, the capitalized costs of station installations and drop and block wires were made depreciable by the accounting changes adopted in September, 1956.

Left to right, C. E. Hoy, Mrs. M. L. Myrick and Mr. Myrick, all of Spokane, Wash.; Mervin H. Alexander of Washington, D. C., and W. E. Driscoll of Medford, Ore.

In 1945, the matter of "cradle-to-grave" accounting for station equipment was raised with the NARUC and the industry, but was pursued only to the exploratory stage. This proposal contemplated including the investment in the equipment on customers' premises in the telephone plant in service accounts from the time such equipment is purchased until its final disposition (whether by junking, loss, sale, fire, or otherwise) and thereby ignoring, for accounting purposes, its inward and outward movements during its over-all service life. The entire matter of station accounting was reopened in 1952 and your association and the Bell System were strongly urged to restudy the proposals for revising station apparatus accounting to see if some of the previous objections could be overcome.

Among the objections to "cradle-to-grave" accounting for station equipment were the difficulties of determining what item would constitute the basic item of apparatus which, when it was finally junked or otherwise disposed of, would require a retirement from the plant accounts. This was particularly difficult in view of the differences in policies of the Bell System and Independent companies in their procedures as to station equipment handling and reconditioning upon removal from customers' premises. The use of a complete instrument as the retirement unit did not seem reasonable inasmuch as relatively few complete instruments are junked. So, other than those instruments retired because of loss or destruction by fire, there would be few retirements chargeable to the depreciation reserve. Thus, during the over-all life of the instrument most of the components thereof would be replaced several times through maintenance.

After considerable study, the concept was adopted whereby each company was permitted to select its own list of disposition units for station apparatus, which units, upon ultimate disposition, would be retired from the station apparatus account and charged to the depreciation reserve. These lists are subject to review by the regulatory agency having jurisdiction.

In the course of studies conducted by the industry to determine the feasibility of procedures and field reporting under the new accounting, an additional primary objective to be accomplished was developed. This goal, the attainment of which the revised accounting makes possible, was a simplification in field reporting whereby the entire time of an installer is charged on all inward station movements to account 232, "Station Connections," and on all outward movements to the depreciation reserve. Work on station apparatus or station connections not involving inward or outward movements is charged to account 605, "Repairs of Station Apparatus." Account 607, "Station Removals and Changes," was deleted. No allocations of time are, therefore, necessary on any one job. As you no doubt are aware, it was often necessary, under the prior accounting, for an installer to allocate his time (and minor materials used) among two or more ac-

Ralph F. Lucier, president of the Independent Telephone Pioneer Association, and Mayme Workman, the Pioneer executive secretary, photographed prior to the Pioneer Association's annual meeting.

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counts. He had to always keep this in mind in filling out his work reports and it made for more involved reporting. I am told that an occupational characteristic of telephone plant men is an aversion to paper work.

One of the means used to make possible simplification in reporting was the combining of certain plant accounts. Accounts 232, "Station Installations," and 233, "Drop and Block Wires," together with the labor and other installation costs formerly included in account 235, "Booths and Special Fittings," and in that portion of account 234, "Private Branch Exchanges," relating to small private branch exchanges were combined into new account 232, "Station Connections." The materials portion of account 235, "Booths and Special Fittings," except furniture items, and of account 234 "Private Branch Exchanges," relating to small private branch exchanges were included with the old station apparatus account in account 231, "Station Apparatus."

I do not recall who first used the terminology "simplified station accounting," but during the years that this subject was under study, it came into common usage as an easy means of referring to the entire project. On a number of occasions, I have heard someone say something to the effect that if this is simplification what in the world would we do if it were complicated.

As you folks in the industry know, the whole matter of handling station apparatus was, and still is, a complicated matter whether viewed from the standpoint of accounting, field reporting, supply control, or otherwise. However, I honestly believe that a considerable amount of simplification has been made possible by the accounting revisions and that as we all gain experience under the new accounting there may be opportunities for further simplifications or economies by additional revisions in the rules, or within the framework of the existing rules. If any of you have any ideas along such lines we are always open to suggestions.

While many of you here represent companies that are not subject to the FCC accounting rules, it is my understanding that many of you are subject to the accounting rules of states that have adopted similar amendments to their systems of accounts and others who are borrowers from the Rural Electrification Administration are required to use the FCC accounting system. So I am sure that many of you have already, through necessity, become familiar with the revised station accounting and the many problems that must be confronted during the period of transition from the old accounting to the new. We have also heard informally that, in the process of revising internal procedures in connection with the new accounting, some companies have discovered imperfections in their accounting and internal supply and other management controls that, while not directly related to this matter, have been corrected or are being corrected as the new procedures are instituted. It is sometimes beneficial to take a new approach to an old problem which for various reasons may have been passed over or ignored.

Miss Christine Miller of Emmaus, Pa., shown with a replica of the first switchboard installed in the United States at New Haven, Conn., on Jan. 28, 1878. The board was displayed by The Whitney Blake Co.

Some of you here may wish to avail yourselves of this opportunity, as you initiate changes due to revised station accounting, to review your procedures, forms, supply control and internal instructions, not only with respect to station apparatus but other items as well, to see if they can be improved upon.

We at the FCC have been well pleased at the general acceptance that seems to have been accorded the revised station accounting. There are undoubtedly some who have been critical of the change. However, it is human nature to resist any radical change in the accepted manner of doing things. This is true not only of accounting but in any other field.

I recall that when continuing property records were first required, the opposition thereto was much more vehement and the requirement was soundly condemned by many as a useless and wasteful practice that might bankrupt many companies. However, once they were installed, they were found in many instances to be of benefit to the companies as well as to regulatory bodies. I have since heard many favorable comments on the advantages, particularly to a small telephone company, of maintaining a currently complete continuing property record.

Last spring we had occasion to work with the REA in drafting a memorandum presenting in concise form the accounting to be performed under the new rules on each type of station movement. It occurs to me that the contents of this memorandum may be helpful to some of you people in the industry. You may wish to keep this portion of my paper for future reference. The memorandum is as follows:

Where station apparatus is not removed upon termination of service by a customer, the costs of the station connections associated therewith are considered to remain as plant in service and continue to be subject to depreciation charges. No credit will be made to Account 232, Station Connections, or charge to Account 171, Depreciation Reserve, until the station apparatus is physically removed or reconnected. (See A and D, below.) The detailed accounting to be performed with respect to station connections is indicated hereinafter.

(A) *Accounting Where Station Apparatus is Physically Removed:*

(1) When station apparatus is removed, whether or not the major portion of the station connections remain in place, the original cost (actual or average unit cost) of the station connections shall be credited to Account 232, Station Connections, and such amount, together with the cost of disconnection and removal incurred at customers' premises shall be charged to Account 171, Depreciation Reserve. There shall also be charged to account 171 the cost of line and number deassignment and of central office testing incident to the operation.

(2) The cost of disconnecting customer lines at central offices shall be charged to Account 604, Repairs of Central Office Equipment.

(3) Item B, 4, below, will also apply unless disconnection occurred prior to physical removal.

(B) *Accounting Upon Disconnection of Stations Left in Place.* Where the station apparatus is left in place after termination of service by the customer, the cost of making the disconnection should be treated as follows:

(1) The costs incurred at the cus-

(Please turn to page 136)

Mechanization of Telephone Accounting

*By R. P. REUSS**

(An Accounting Conference Address)

RECENTLY, I came across an article on the subject of mechanization of office functions which was written about 30 years ago. It opened with a story which has certain application to the present-day situation in the data processing field.

An aggressive, young salesman of office equipment was attempting to sell the owner of a Chinese laundry a key-driven desk-size calculator. His prospective customer seemed quite interested and so the salesman proceeded to demonstrate how rapidly the calculator could price a large stack of laundry slips. The Chinese launderer then suggested that a test be conducted to see if the new machine was faster than the way he was now figuring his prices.

He called a young Chinese boy from the back room and the boy sat down with an abacus to compute the same laundry slips. On the basis of comparative time, the abacus method won by a wide margin and our office equipment salesman felt sure that the sale was lost. However, to his surprise, the launderer still placed an order for the calculator. About six months later the salesman decided he would call on his customer to see how the new machine was working.

As he entered the door he saw the calculator prominently displayed but on closer inspection found an accumulation of dust which indicated it was not being used. A bit perplexed, our salesman asked the launderer what he now thought of the new machine. The launderer answered that he was very satisfied with it. The salesman pursued the point further and suggested that it did not appear that it had been used recently. The proprietor replied, "Why we don't use that machine to price laundry bills, we use the abacus—much faster. But, when my customers come in here they see nice, new machine, then they know we run a really modern business."

Because of the fascination and glamour associated with modern "electronic brains," I suppose that all businesses are tempted today to prove how up-to-date and progressive they are by installing a large scale computer. There may be certain cases where this desire to have the "latest gadget" has influenced in part the decision to install new mechanical and electronic business machines. It does not appear, however, that this has been the case in the telephone industry. Today, we have no large scale electronic computers in service in the telephone business—although it should be pointed out that plans are under way among both Bell and Independent companies for the installation of such equipment in the near future. What seems to be an absence of rapid progress in mechanizing the accounting job in the telephone industry is due, I believe, to some sound reasons—

(1) We do not mechanize our accounting and clerical work for the sake of mechanization alone. Fairly generally we insist that each step that is taken on the mechanization road be "proved in" on an economic basis.

(2) We do not accept the principle that as bigger and better machines become available we should look for tasks in our business which can be mechanized with these machines. Instead, we closely analyze the real requirements of our business, simplify these requirements wherever practicable, and then look for data processing equipment which can meet the requirements of our job in the most satisfactory manner.

(3) We recognize the fact that in order to utilize electronic and electro-mechanical data processing equipment, we must first put our source data or input documents into a form the machine can understand, sometimes referred to as "machine language." Therefore, we feel that considerable investigation should be made into the problem of *data origination* before going too far in the installation of *data processing* equipment.

With this general philosophy in mind, I would like to discuss with you the progress that has been made in the mechanization of the telephone accounting job. For the most part my remarks will be based on Bell System experience. This does not in any way indicate, however, that the record of the Independent companies in this field has not been equally impressive. In certain areas, as we will note later, pioneering efforts have been made by Independent companies.

We might first take a look at the job of producing a telephone bill for our customers. The customer billing job consists of processing a very large volume of data including telephone messages to be billed, customer payments to be credited, and service and equipment records to be up-dated due to service order activity. While the volume of data to be processed is relatively large, the calculations involved are fairly simple from a mathematical standpoint. The final printing of a telephone bill and related statements, plus data for studies and reports are, of course, large volume jobs. All these areas are continually being explored from a standpoint of work simplification and mechanization.

Let's review what is being done to put the data from which our bills are prepared into machine language. The biggest step forward has, of course, been the automatic recording of telephone messages as a by-product of dial

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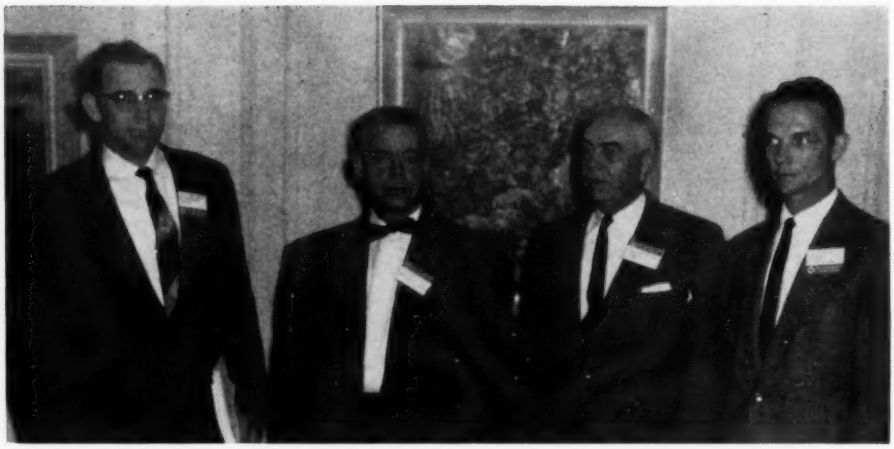
switching. Here, telephone companies are in a more fortunate position than most businesses since the customers actually do our data origination as they dial their calls.

Automatic message recording systems will be in use in approximately 113 Independent exchanges by the end of the year. Among the interesting plans in the Independent industry is the Western Reserve Telephone Co.'s system for recording messages on magnetic tape using Stromberg-Carlson equipment. This system has the unique advantage of being able to rate all customer-dialed messages placed through their equipment. Also, it transmits information recorded in the local central office to magnetic tape machines in the centralized accounting center. Also of interest is the trial of Federal electronic recording equipment in the Central Virginia Telephone Corp. This system, we understand, will record customer dialed calls on a magnetic drum. This information will later be spilled out on five-channel paper tape for conversion to punched cards and preparation of the toll statement.

Through the Bell System automatic message accounting system (AMA), automatic input of information is obtained for message unit as well as toll calls. This system automatically records on a paper tape all the details of the call for billing—local office AMA equipment records these details automatically whereas the centralized version (CAMA), records everything but the calling telephone number which is keyed in by a special operator.

Automatic number identification equipment for CAMA is currently under development. By processing the paper tape produced by this system at AMA accounting centers, the elapsed time is computed and the paper tape converted to a punched card for later machine billing utilizing commercially-available tabulating equipment. At the present time, a number of Independent companies served by Bell System toll centers are receiving machine-prepared toll statements for calls placed by their customers through CAMA equipment. By the end of the year it is planned that about 15 per cent of Bell System toll messages will be recorded by AMA or CAMA. With new central offices and additional modifications of old ones this should expand to something better than 50 per cent. This should include about 80 per cent of the station-to-station business by 1965.



Left to right, E. L. Williams of St. Petersburg, Fla.; C. W. Cranfield of Toronto, Ont., Canada; A. E. Reynolds of Bristol, Tenn., and H. A. Steele of Lakeland, Fla.

The present AMA equipment can only record station-to-station calls. To expand it, a trial is planned for next year of a modified version to record customer-dialed person-to-person and collect calls. With this system the customer would dial an additional prefix number to tell the equipment that he wishes to place a person-to-person or collect call. The equipment would signal a special operator who would secure the called person or acceptance of the collect call and then advance the call which would start the timing. All recording (except calling number and class of call) would take place automatically as with other customer-dialed calls. It is planned to use this system in large metropolitan areas like New York where it might be possible to automatically record another 30 or 40 per cent of the total toll traffic.

Another part of the message business, which is recorded by machine, includes the local message and metropolitan area calls which are recorded on message unit registers in older central offices. Many companies are now photographing these registers and keypunching the readings from the photographs. In other companies, an employe in the central office passes the register reading over the telephone to an employe in the accounting office who records the reading on a "mark-sense" tabulating card. (On a "mark-sense" card, data is entered by marks made with a graphite pencil. These marks can be sensed by a processing machine which converts them to punched holes.) So far an economical register that can be read directly into a machine has not been developed.

Despite the strides in the mechanization of customer dialed calls, a large amount of traffic, principally person-to-person and collect calls, will probably not be mechanized for some time. In order to obtain the data concerning these calls at their original source in a machine readable form, several companies are considering programs for using mark-sense tabulating cards at the switchboard. Mark-sense tickets are already being prepared in some places—the Lorain (O.) Telephone Co. and Elyria (O.) Telephone Co., among others. A somewhat similar technique called "mark scanning" has been used for some time in Sweden.

Under a proposed plan being considered by Bell System companies which goes in a bit farther than most plans heretofore attempted, the traffic operator records in mark-sense form on a tabulating card most of the information pertinent for billing at the time the call is being completed. Other nec-

Left to right, R. M. Coggin of Warsaw, Va.; Mrs. Coggin, and I. K. Gleason of New York City.

essary information is recorded in long hand. Cards for completed calls are stored at the switchboard with delayed calls being delivered by messenger to the delayed ticket position. Each day the completed cards are forwarded to the accounting office.

In the accounting office, the elapsed time for each call is computed and entered on the card in mark-sense form. The cards are then processed through a reproducing punch with the result that the necessary information for rating and billing the call is in punched-card language.

Another part of the customer billing job which involves considerable volume is the crediting of payments to customers' accounts. Under the present punched card billing plan now in effect in many companies, cash payment data are normally key-punched into tabulating cards for later machine processing.

However, more promising methods are under trial in certain companies. Under the first of these methods the customer receives a punched card bill form with a payment stub attached. This payment stub contains punched holes indicating the telephone number and the amount of the bill. Customers are requested to detach and present these stubs with their payments. If the customer pays his bill in full the stub is forwarded to the accounting office and serves as the record for crediting his account. If the customer makes a partial payment, the amount of the payment is mark-sensed on the stub by the business office before forwarding. These stubs in turn are processed through a reproducing punch and a machine-readable document is available for processing. This plan is being used by the Chesapeake & Potomac Telephone Co. of Virginia and I believe somewhat similar procedures are followed by a number of Independent companies.

Another method, currently employed by the Ohio Bell Telephone Co., involves the use of a paper bill form with a payment stub. Upon receipt of the payment stub in the accounting office, it is processed through an electronic device which scans the printed character optically and translates the printed entries on the stub into electrical pulses. These pulses, in turn, activate a card punch producing a tabulating card which contains the information necessary to credit the customers' account. This machine is known as an Analyzing Reader and has been developed by the Intelligent Machine Research Corp. Due to the inability of the reader to recognize other than machine printed information, only fully-paid accounts are processed in this manner. Partial payments or illegible printing are recognized and rejected by the device for manual key punching.

A third method of obtaining automatic input of customer payment information, which is being tried in the New York Telephone Co., involves the use of a document perforator and reader. Through use of a special punch unit mounted on a tabulating machine, the telephone number, amount of bill, and other pertinent information is perforated into the payment stub in standard five-channel teletypewriter code as a by-product of the present bill printing operation. Upon receipt of the payment stub in the accounting office, the stub is fed through a reader which transfers the punched information into a punched paper tape. A tape-to-card converter then converts this paper tape into a standard tabulating card. Partial payments are manually key-punched under this method and crediting of payments to the customers' accounts is performed by punched card methods as in the case of the other plans described above. Under this plan, since the basic information is in standard teletypewriter code, automatic transmission of payment data between accounting and business offices by teletypewriter is possible.

With respect to service order activity, the necessary details for up-dating service and equipment records and computing nonrecurring and partial month charges are being key-punched into tabulating cards for later processing. In some companies, service order information is transmitted between departments by standard teletypewriter equipment. Under this arrangement, the original record of data is entered on punched paper tape. By using a tape-to-card converter, a punched card containing service order details may be produced without key-punching.

We might now take a look at what is being done to process this billing information which is in punched card form. From a processing standpoint, billing involves sorting, merging and summarizing of the various input cards for the preparation of toll statements and customers' bills. Some simple calculations are performed in connection with the computing of charges. Most telephone companies are preparing either punched card bills or paper bills through the use of tabulating equipment. Punched card bills have the advantage of providing automatic input for the crediting of cash payments and under certain circumstances can be prepared with less expensive equipment than required for paper bills. On the other hand, paper bills can be produced more rapidly and may be more economical in large volume operations. Post card bills are also being prepared by a few telephone companies through the use of tabulating equipment. The maintenance of deposit records and coin telephone billing have also been converted to punched card processing in some companies.

By the end of 1957, about 40 per cent of the Bell System customers will receive bills processed by punched card techniques. We understand approximately 30 Independent companies are now using punched card equipment for this purpose. By the end of 1958, it is anticipated that 55 per cent of the Bell System bills will be prepared in this manner. Growth in the Independent field might be expected to be comparable.

An additional processing job is the pricing of AMA toll messages which have been recorded in punched card form as the result of the tape-to-card operation described earlier. A master rate card is maintained for each combination of terminating and originating points between which a customer may dial. The detailed message cards, which are produced for each toll message, are matched with the appropriate rate cards after which a computer, using the basic call details in the message card and the rates in the master card, prices the toll message.

With the expansion of customer dialing, the master rate decks to perform these rating operations are growing tremendously. Because of this some attention has been given to the possible use of electronic computers to perform this job.

We might stop at this point to review just what can be accomplished through electronic data processing equipment.

First, use of this equipment permits the highly condensed storage of large quantities of information by means of magnetic spots recorded on metallic drums, plastic or metallic tapes, or metallic disks.

Second, the use of electronic and electro-mechanical circuits makes it possible to perform arithmetic and logical operations at relatively high speeds under a system of automatic control—called a "program." Once the machine is given its program—or set of instructions—it carries it out without further manual intervention.

Thus, a high volume job like toll message pricing—which requires the storage of large quantities of information contained in mileage and rate tables, determination of the appropriate rate for each message, and the calculation of the amount to be billed—appears to be a good candidate for electronic data processing. A number of suppliers are

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looking into this job for possible application of their equipment.

Experiments have been made in the use of the recently introduced Type 305 RAMAC computer. The magnetic disc storage of this machine contains an identifying code for each terminating point and originating rate center combination between which the customer may dial. This code directs the machine to the proper rate schedule which is stored on a magnetic drum in the processing unit of the computer. It is estimated that an accounting office serving 40 or less originating rate centers would obtain the maximum benefit from this type of equipment. While the trials so far have been limited to the pricing of machine recorded toll messages, it may also have application in pricing operator-ticketed calls.

What about future developments in customer billing? There is no doubt but what we will see the use of electronic data processing machines in this field within the next several years. Up to this time it has not appeared economical in most accounting offices to install large-scale electronic equipment. However, economic studies made in the Bell System indicate that in certain large accounting centers electronics might be "proved in." Developments are moving ahead rapidly and, at some time in the near future, optimum size electronic computers should become available to us to perform more cheaply the job now being done by punched card equipment and manual operations. In the meantime, the progress which is being made in the development of automatic input to the billing job will facilitate the future introduction of electronic equipment.

Mechanization in the customer billing field has resulted in improved accuracy, better looking bills, and more prompt preparation of revenue reports and study data. It has also produced many "by-product" reports and data which have reduced the clerical load of the operating departments.

We might now turn to the mechanization of property and cost accounting and payroll work. The first installation of punched card equipment in the Bell System to perform property and cost accounting operations dates back to 1913 when Powers 45-column equipment was used. By 1924, we had five installations using Powers and Hollerith equipment in New York, Philadelphia, Chicago, Baltimore and Boston. In 1927, the first 80-column punched card installation was made in Ohio. In the past 30 years, most of the operations related to property and cost accounting which are reasonable candidates for mechanization have been mechanized.

At the last 10 USITA conventions Minnesota women delegates have held an "unofficial" luncheon meeting. Here is a group of them greeting Mrs. P. M. Ferguson Sr. of Mankato, who has been absent from the last few meetings. Left to right, Mrs. M. R. Wright of Fergus Falls, Mrs. Ferguson Sr., Mrs. James Boyd of Alexandria, Mrs. P. M. Ferguson Jr. of Mankato and Mrs. Peter Finnegan of St. Paul.

The two principal jobs with high volume, namely, the evaluation and distribution of labor and material, have been mechanized successfully in many offices. These operations are ideal for punched card mechanization, in that the card which is prepared from the original field work report can be used several times in the preparation of pre-journal and post-journal reports, details, and records. The most significant advances in recent years have been made in the field of records work. Many companies now maintain continuing property records, perpetual inventory records, and specific estimate and job order ledgers on a complete mechanized basis.

In the Bell System, over half of our offices have mechanized certain phases of the property and cost accounting job as have more than 20 Independent companies.

One interesting trial in the property accounting field has been in the use of mechanized procedures for controlling field stocks of telephone sets. A set of two-numbered tabulating cards is originated for each telephone set shipped from the warehouse and for each set removed from plant by the field forces. The No. 1 card for each set goes to the accounting office (or plant control office) for file, and the No. 2 card remains physically with the set. When the set is placed in service the No. 2 card is removed from the set and sent to the accounting office for matching with the No. 1 card. Similarly, when a returned set is actually received in the warehouse, the No. 2 card is removed and sent to the accounting office for matching with the No. 1 card. Thus, at any time the file of unmatched No. 1 cards may be tabulated to obtain a statement of the field inventory of sets. By entering location or employe information into the card at the time of origination, close supervision of field stocks is possible.

At this stage in development, the mechanized control plan appears quite costly, particularly because of problems in physically associating the tabulating cards with the telephone sets. However, with improved techniques and with accompanying savings through better administration of field stocks and reduced inventory losses, the plan may prove to be worthwhile.

Two companies in the Bell System have recently installed medium scale magnetic drum electronic data processing equipment to perform property and cost functions. The principal advantages to be gained from electronic equipment appear to be—

(1) A reduction in the time required for processing, making cost and financial reports available to management more promptly.

(2) Improved accuracy of the data processed due to the elimination of certain manual processing steps, and the accompanying human error, in punched card accounting systems. Cost reduction has not yet been significant.

We have not yet reached the point in the use of electronic equipment where it is economical to interrogate a machine and read out those facts which we want to know about our operations at the particular time we want the answer. As to the ultimate that might be expected from electronics in the cost accounting field, we are looking forward to the time when we can feed daily into an electronic machine the facts concerning our operating expenditures and then read out from the ma-

(Please turn to page 139)

Report of USITA Engineering Committee

*By P. H. HENSON**
Chairman

THIS IS A report of the USITA Engineering Committee on its 1957 activities. As befits an anniversary year, 1957 has been one of noteworthy accomplishment. While the association is celebrating its 60th anniversary, the Engineering Committee can but contemplate its first birthday. Using the parent association as a guide, the committee can grow and progress only if its activities are directed along the route which serves all its members and at the pace which satisfies current needs continuously and expeditiously. If we can travel the road that has been broken for us, the now infant committee, too, can be a giant upon reaching the mature age of 60.

The general theme of this 60th annual convention, namely, "Independent Telephony—A Vibrant Voice in an Expanding Economy" is particularly well suited. It is equally appropriate for the Engineering Committee.

Certainly, a strong element in the growth and progress of our industry has been the accomplishments in plant design and implementation effected by a rather generally misunderstood group called engineers. With the need to serve an ever-increasing number of subscribers with an ever-improving grade of communication services, the engineer has emerged from his garret, looked up from his drawing board and joined management as "a vibrant voice in an expanding economy." In a similar manner, the engineer has found identity within the association. It is the sincere intent of your committee to reach the heights envisioned by a foresighted board of directors. All things considered, we are off to a running start.

The organization and growing pains reported to the board at its Mar. 12, 1957 meeting have now become labor pains. The Engineering Committee has, in its year of inception, enjoyed acceptance by the industry through participation in a number of significant undertakings. The future looks even better.

A brief summation of committee functions and activities follows in approximate chronological order.

As elaborated in detail in the sub-committee report, a technical committee meeting on Direct Distance Dialing (DDD) matters and practices was held with the AT&T company on Feb. 25, 1957. Sub-committee members Ruggles, Davis and Donaldson were present as was Henson of the main committee. The work being accomplished by this sub-committee in specifying and introducing technical standards for industry-wide participation in the progressive stages of toll dialing is most commendable. All of the various interests of the Independent segment of the industry are well and fairly represented by this sub-committee. The harmony and understanding that exists between manufacturers of toll ticketing and switching equipment is adequate evidence of this condition.

On Apr. 4, 1957, Messrs. Driggs and Henson of the committee participated in discussions with AT&T representatives concerned with maintenance and service problems being encountered on Private Line Services. While design features for transmission and operational standards formed a part of the agenda, the main emphasis fell on service initiation and trouble-free operation. The commercial and plant committees were also represented, thereby permitting some exploration of revenue settlement matters as well as inter-company responsibilities for operation and maintenance. With the presentation of data and statistics, it became evident that Independent operating companies must (1) be encouraged to provide Private Line Services, (2) must effect a revenue settlement that will be compensable, if not profitable, and (3) conduct educational and training programs to create an awareness of the need for trouble-free operation. Design objectives on Private Line Services will be the subject of later Engineering Committee reports while the other matters will be handled by the appropriate USITA committees.

The Engineering Committee reviewed and studied Policy and Procedure Memorandum 30-4, as proposed by the Department of Commerce to provide for reimbursement of costs incurred in moving plant facilities incident to federal aid highway construction. The committee opinion, as forwarded to the executive vice president, indicated that from an engineering standpoint the proposed practice offered equitable reimbursement.

The Engineering Committee was represented by Mr. Driggs at an "industry meeting" on electrical and mechanical standards for telephone wire and cable at the REA headquarters in Washington on Apr. 23 and 24. The discussions covered such subjects as the elimination of polyvinyl compounds as sheath materials, the establishment of polyethylene sheath thickness schedules, capacitance deviation requirements, color coding on cable and distribution wire, the use of direct buried cable and wire and the issuance of industry specifications on bridle, parallel distribution and station wire. With representation from our association, the Bell System, the REA, and the majority of the wire

(Please turn to page 142)

*Mr. Henson is Chief Engineer of Lincoln (Neb.) Telephone & Telegraph Co.

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Prospectus— Engineering Committee

*By F. E. NORRIS**

(An Engineering Conference Address)

WHEN YOUR chairman asked me to talk to you, he drew attention to the fact that I could not report on the committee's (Engineering) past activities because it doesn't have a past. He thought it might be well, instead, to strike a sort of keynote for the future of this new committee. I like that idea and will comply as well as I can.

As I see them, the committee's aims might fall into two broad categories. The first of these is to find ways and means of doing our every day job better. For this to be of purpose, the committee must make appropriate studies and analyses and also, naturally, must report its findings to the USITA membership. That this is not an original idea or a startling thought should not detract from its importance.

The second category, a more glamourous one, perhaps, pertains to new inventions, new ideas, new materials and new apparatus of all kinds. If the committee is to lead instead of follow, it must be alert to the possibilities new innovations offer for improved service and for more economical operation. And, as before, make known what it has learned from its investigations.

It is not my thought to quote a lot of figures. A few, though, will give an idea of the big job lying ahead of the engineers, and, of course, of the managements too. In terms of plant investment we added 2½ times as many dollars to our accounts during the last 10 years as we did during our entire previous history. As impressive as this might be, it is considerably shaded by the rate we have grown, investment-wise, during the last *two* years. Last year, for example, we grew by 280 million dollars. This is 1.6 times as great as the last 10-year average. That's quite a growth. The engineers probably spent over 300 million dollars gross in order to net that 280 million dollars.

Now, I'm through with statistics. I've used them only because I think they give an idea of the size job the engineer has in the future. They suggest, too, the serious burden on the engineer who must be sure that the dollars available to him are spent only after considering *all economic* as well as service factors. It is largely up to him — the engineer — to see that the plant he builds produces—and by "produce," I mean to show a profit.

To meet his obligations he must have more than a handbook to rely upon. He must be appreciative of management's problems and objectives. He must be forward looking, creative in his thinking, willing to use modern techniques and materials and apply good common sense to the problem at hand.

To inspire and aid in developing such attributes is an aim which this committee should set for itself. The old school of "do it the way you've always done it, do it quickly and get on the next job" must be challenged.

Our product is service. It is our only product.

Our installers, our operators, our commercial people and our maintenance men are the ones we generally think of as being responsible for the kind, and how much, service a company gives. This may be so under a narrow definition of service. Since service *is* our only product, it follows that everyone contributing to the success of the company is also contributing toward the production of that product. This is a long, round about way of saying "service" is as much the engineer's business as anyone else's in the company. At times, though, this isn't so apparent.

"Service," in a broad sense, is a nebulous sort of thing. It can't be precisely measured. This partly is explained by the fact that service is something of a state of mind. It can be observed that a succession of minor difficulties will add up to a much more dissatisfied customer than one large serious failure. These minor difficulties concern all kinds of things—whether the bill presented for payment is understandable, whether the customer gets the color he wants, whether he gets courteous treatment, whether promises are kept, whether he can get *what* he wants *when* he wants it at a price he is willing to pay, as well as whether he can hear well and whether the facilities operate reliably and without interruption.

It would be wrong for the engineer to think his contribution to the end product concerns only the provisions of facilities free of interruption and facilities over which the customer can hear well. These possibly are the main things he should think about. The progressive, imaginative engineer, however, must think about many other things, too.

He will be alert to new and better ways of doing things and to adapt new, modern apparatus to his plant—whether the motive be to enlarge the scope of service, to make it more reliable, or more economical. He will be professional in his thinking about these and many similar matters, never taking anything for granted and getting all the facts before he offers a proposed solution. These, among other things, are *service* problems for the engineer.

Under the now well-established merchandising concept we aim to find out what our customers want and are willing to pay for and then lay out plans

*Mr. Norris is Vice President-Planning and Development of General Telephone System, New York City.

to satisfy those wants. We might, for example, learn their wants from surveys, from records of unsatisfied requests or from customer reactions.

Our service is criticized time again by customers whose only complaint is that they can't use the line when they want to. The record in many of our rate cases testifies to this. So does the continuous and large flow of party line interference complaints. I wish to develop this thought to illustrate the less apparent ways service and the engineer are brought into focus.

At the start let me assure you, however, that I do not intend to suggest or imply that you convert your party lines to individual lines within even the next few years. I know you can't do that. But let us see what thoughts are developed.

We may say the party line customer is getting what he is paying for, but I doubt that we can say he is getting what he wants. In many cases, he is not getting what he is *willing* to pay for.

Why do so many companies promote party line residence services in preference to individual line service? Ask them and you'll get a good explanation. There are quite a number of good explanations—and I mean really good ones—including a shortage of plant and equipment. To discuss the state of mind which might cause a company to prefer promoting party line service would become long and involved. I will, therefore, limit myself to the proposition that whatever causes the preference for party over individual line service there is the underlying thought that the company profits more by such a preference.

Whether a company—or the customer—benefits financially with party line service as compared to individual line service I do not know. I've never seen it proved one way or another.

This is, however, a subject which at least starts with an engineering analysis. After such an analysis is made, it may be difficult to get management to change its long-standing policies, even though the figures cast serious doubt on the economic wisdom of those policies. But, fear of failure in this shouldn't deter the engineer from seeking the truth.

It would be quite a story to develop the complete pros and cons of urban party versus individual line service and I shan't try. I wish, however, to develop a few points to illustrate somewhat the character of the problem. The service and public relations advantages are entirely with the individual lines. Also, for a given number of stations more cable pairs are used. Central office equipment will cost more, too, but definitely not in proportion to the increase in cable pairs or lines.

Left to right, D. A. McLean of Denver, Colo; A. T. Renn of Chicago, Ill., and R. P. Reuss of New York City.

On the other hand, there are many factors to *offset* these cost increases. Among these: Local service revenues will increase. Toll service revenues will also increase because there never is a party line block, in or out. Intercepting services cost less; so does the cost of instruments and the cost of disconnecting and reconnecting service for bill treatment. Costs arising from party line intereference are eliminated entirely (and this, incidentally, is a much bigger item than you at first might think). Clearing certain kinds of trouble (such as line troubles in the drops) costs less on main lines than on party lines.

There are many other items opposed to party line service, such as higher distributing frame costs, use of three-conductor instead of two-conductor interior wires and ground rods for divided ringing, etc.

Now, I doubt that an engineer can place a dollar and cents value on every economic item that he can think of, but he can do so on enough of them to show that party line service is not all beer and skittles, economic-wise. Anyway, this is illustrative of the service problems to challenge the engineer. He'll find it, and others like it, complex. If they weren't, they would have been solved long ago.

Lucille Russell of TELEPHONY pictured with our voice recorder on which nearly 200 messages were recorded by convention delegates to be sent home to families and friends.

It is consistent with good engineering principles to question whether practices, specifications and concepts that were good years ago properly fit into the modern approach to the telephone business. We are living in an age of rapidly changing technology. We must adjust our viewpoints accordingly or soon be outdated. We must be careful not to be complacent about the future.

We must aggressively think of ourselves as *communication* companies, not telephone companies alone. If we don't, many important communication services will be rendered by someone else. Let us not be like the railroad man who watches the plane whiz by. We must be sensitive to our customer's communication requirements and see that he gets the kind of service and facilities he needs when he needs them and at a price he is willing to pay. In many cases this means furnishing private line services.

By private line I am referring to the so-called right-of-way services of the type which are installed between two locations of a particular subscriber for his own private use—a line which does not connect to the central switchboard. I give this definition in order to avoid confusion of terms with the individual line, regular subscriber service I spoke of a moment ago.

I know that many companies have *not* been sympathetic to furnishing private line service because they felt it would reduce their tolls. This may be true in some cases. I suspect, however, it is not true in the majority—at least not so some months after the service is

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established. As customers "saturate" their private lines, they resume the use of message tolls as much as before. But even if it were true, how long can we prosper if we purposely deprive our customer of what he needs.

If we don't give him private line service when he needs it, he will provide it himself or ask someone else to do it for him. Then where are we? Our toll is reduced. Our customer is angry with us and we've lost the private line revenue to boot and, more important, we've abdicated our position of being *the* communication company. A positive attitude toward this kind of service many times will place the engineer on his mettle.

Private line service development, as I see it, is just a step ahead, chronologically, of *data transmission service.* By data transmission service I am referring to the art by which electrical impulses are sent over a communication channel to a machine which produces from them words, figures and recognizable codes.

Yet, data transmission is not new. Teletype service, for example, requires data transmission. And, incidentally, the private line now used exclusively for teletype service may, in the future, also be used alternately for high speed data transmission.

Data transmission service promises to become very important and, within a few years, a rapidly growing service. The reason for this lies in the many new and wonderful machines being developed—the electronic brain, memory devices and the lesser data processors. Industry's growing knowledge of how to improve its operations through their use will be a factor. These machines are expensive, and particularly so if an installation had to be made at each of a company's many branches. But one installation to service all branches will change the picture. Integrating customers' branches with a centralized installation will be feasible by the use of our exchange or toll lines.

As data transmissions grow in volume, the number of toll circuits and revenue levels also will grow. The number of circuits required may be modified to some extent by the fact that transmission of data can frequently be made at night when they are not so busy for voice communication.

I think perhaps one case I heard about will illustrate how our toll circuits may be used for high speed data transmission. This case concerns a bank with a large number of branches in the state. The bank's practice now is to transport by courier the statement of condition at each of the branches to headquarters at the end of each business day.

Seated, left to right: Mrs. E. C. Blomeyer of Chicago; Mrs. Walter Dakin of Madison, Wis.; Mrs. G. B. Foscue of Wilmette, Ill., and Mrs. Roy Brooks of Florence, Ky. Standing, left to right: Genevieve M. Sauerhage of Springfield, Ill., and Katherine Bauer of Jefferson City, Mo.

Under the proposed "data" arrangement, the branches will type their statements during, or at the end of, the day, *storing* the data on, for example, a tape. This tape will be run at high speeds through a sender which places the data on the regular toll lines. A receiver at headquarters picks the data off the toll line and produces a duplicate tape which may, by the way, be run at normal speeds into a processing machine for producing the desired statement of condition.

The receiver at headquarters must, of course, be compatible with the sending machine at the branches for there are various kinds of machines and arrangements for sending and processing data. There are, for example, paper tapes, magnetic tapes and punched cards. The data at the receiving end might be processed directly, or be stored on tapes or possibly be stored in a memory device.

Practically every business with branches, substations, decentralized production, outlying warehouses, etc., are potential users of data processing and of our circuits. Any multi-exchange telephone company might have use for data transmission and processing for getting time reports, cash reports, service orders, material receipts and disbursement reports, etc., into headquarters.

Now, let us consider the circuit requirements needed to carry high speed data transmission service. In this we are fortunate. The circuits, equipment, etc., we now have will do the job without any special treatment. The circuits need only be reliable and free of interruption.

Before continuing, however, allow me to draw one line of demarcation.

Data transmission service falls into two broad categories. One pertains to special military requirements such as SAGE and missile detection, interception and control. These, I understand, require something more than regular toll circuits as we know them. I haven't been, nor will talk about that kind of service. The other category pertains to *all* business requirements including many and probably most of the usual government requirements.

For this second requirement—business and most government—our regular circuits as we have them today —and as mentioned before—will do the job.

A new term has been created to explain the transmission of data at high speeds over regular telephone lines—*Dataphone Service.*

I predict you will hear a lot about this new term—*Dataphone Service*—in the future.

Here is how Dataphone Service will work. An installation of *compatible* equipment will be made at two or more locations for a customer. A toll call will be made from the sending source to the receiving end to announce data is ready for transmission. When the receiver announces readiness, each switches from his regular telephone to his data transmitter or receiver. At the end of data transmission they come back on the line for an "OK" and hang up. When they switch from telephone to data, they interpose between the telephone line and the data sending or receiving apparatus a Dataphone Service Subset. This is furnished by the telephone company. The Dataphone Service Subset at the sending end,

among other things, changes the "bit" codes from the tape or what-have-you kind of impulses to *tones* which can be carried over the telephone lines. The Dataphone Service Subset at the receiving end reverses the process.

How much of the equipment, if any, at the customer's premises in addition to the Dataphone Service Subset might be furnished by the telephone company poses a question. Some of it may and possibly should be furnished by the telephone company. But certainly the large computers and the "electronic brain" type of thing will be furnished by the customer. These questions are in concert with the current experimental stage of development.

What will be the effects of data transmission service on toll volumes is a good question. All the logic of the situation suggests that message tolls will be increased. For one thing, a toll call is required to set up the circuits for Dataphone service. Then, too, the circuit will be held up during the transmission of data. Further, the data transmitted, excepted to a negligible degree, is not of the kind which uses toll calls today.

So, in the over-all, we may expect "data transmission" to *increase* the charged-for time of toll calls. Some students of the subject even think that in 15 years the circuit usage for "data" may exceed that for voice toll —who knows.

Data will probably have a greater effect on teletype service. The degree is conjectural. Teletypes will continue to have a use for "send-now" transmission. Possibly the greatest effect data will have on teletype service is to slow down its rate of growth as we have seen it in recent years. Not eliminate it.

Data transmission service is a large subject. This time next year we will know much more about it. Possibly it will be a good subject for a more complete research and report next year. Also, it is an important subject of which this new Engineering Committee should keep abreast in the days ahead.

C. B. Hansen (left) of Elkhart, Ind., and Paul Bransby of Columbia, Pa.

Left to right, M. S. Burton of Tyler, Tex.; C. M. Warren of Greensburg, Ind.; Pierre F. Goodrich of Indianapolis, Ind., and William Hastings of New York City.

Another subject that this committee must keep on its agenda in the future is *electronic switching*. There have been many great and wonderful technological improvements in toll facilities. Electronic switching, however, promises to be the first *real* improvement in exchange switching since the undertaker in Kansas City invented the dial telephone over a half a century ago.

I certainly do not know enough about electronic switching to do very much speculating about it. That it will be a part of our regular equipment of the future seems a certainty. It also is clear that as relays and mechanisms pass out of the picture—very gradually, no doubt—our engineers must know about something more than dc circuits. Not next year—or the year after—but one of these days the equipment engineer—and maybe the plant engineer, too—will have to know more about electronics than he knows about them now.

This isn't anything to be frightened about. It wasn't too many years ago that we broke through the fright barrier and started installing and maintaining carrier equipment. I can recall —as some of you can—the reticence that accompanied the introduction of carrier equipment to our segment. Now we take it in stride—as we now are beginning to take microwave in stride.

So, it will be with electronic switching. The only point is for us to start thinking in terms that one day—before many more years pass—it will be with us. And this is another matter which this new committee must keep in mind. It should do what it can to keep our members informed and abreast of this and other new developments.

The things I've been talking about (and there are others) bring a real challenge to the engineer. I think the Telephone Engineering Management Course our association, sponsored this year at Michigan State University, will help the engineer meet these challenges.

Like any new venture this course had many rough spots. We learned about them by interviews, an appraisal survey and by the observations of visitors to the classes. Because the weaknesses are known, next year's course should be greatly improved. And yet, it was interesting to observe that while the participants offered many constructive criticisms, they strongly endorsed the substance of the course and recommended it be continued in 1958. It will be continued.

This course, by the way, is strongly oriented to fundamentals as contrasted to training—oriented largely to engineering economics. It does not presume to tell engineers *how* to build plant —they already know that. Accordingly, we don't have to worry about size and local conditions. Because it is oriented to fundamentals, it is of as much value to the small company as to the large company. We strongly urge that you investigate and give serious consideration to attending, or having someone from your company, attend the course next year.

It has always been my belief that during each association year, the operating committees at least should leave something of more or less enduring value behind them. There always is at least one important problem facing the industry that a committee should study thoroughly. To be of purpose, the study results naturally must be reported in clear and useful form, preferably as a pamphlet. The field of engineering analysis, engineering economics and the rapidity with which present day technology is changing, assures this committee of a plentiful supply of subjects deserving its attention.

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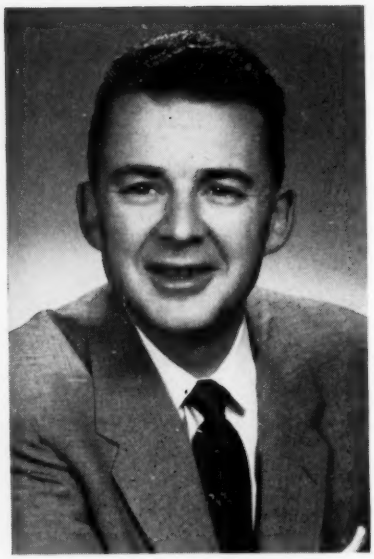


Toll Ticketing Guideposts

*By L. GRAY BECK**

(An Engineering Conference Address)

WE, IN THE telephone business, must always be alert to the new developments in the art of telephony and to the changing desires on the part of our customers. We must never lose sight, however, of the fact that we are in business to make a profit, while, at the same time, rendering good and adequate service to our customers. In reviewing toll ticketing guideposts, it will be my aim to keep both of these thoughts in mind.

Of necessity, it will not be possible to explore in any great detail the various guideposts, however, it is my objective to present many of the items we considered with the hope that when you consider toll ticketing, some of these things will help and guide you in your decision. The three general guideposts I have selected are, first, early planning; second, after the decision has been made; and third, cut-over and post-cut-over considerations.

Nearly three years ago, we in the West Coast Telephone Co., started investigating the possibilities of providing automatic toll ticketing in our system. As of last month, we placed in service two systems of the operator identification type, which are providing Direct Distance Dialing (DDD) facilities to approximately 55,000 stations in 19 exchanges. In these two systems our customers have access to approximately 330,000 stations. Late in November, we expect to place another system in service which will have access to the presently available national DDD network. This system will provide DDD to approximately 25,000 stations in 10 of our exchanges.

Early Planning

The fact that some companies have ticketing equipment, and others have already started engineering or installation, does not necessarily make it proper or profitable for every company to embark on such a program. Each case must be judged and considered on its own merits. In looking at the economic considerations, such things as means of handling the growth of present toll equipment, the replacement of obsolete toll equipment, the lack of suitable female labor for manual operation, and any particular or peculiar operating problem must be carefully studied.

In the making of the economic study, a thorough analysis of present and projected traffic expenses is necessary. The originating traffic must be studied to find out how much of it can be automatically ticketed. That part which cannot be ticketed becomes a most important factor because it is the most time-consuming from the operating viewpoint. This traffic, which must be carefully analyzed from the cost of handling standpoint, includes person calls, collect calls, credit card calls, third number calls, coin box, hotel and other calls requiring immediate quotation of charges. You will no doubt find that your over-all office coefficient (units per call) will increase considerably over the present. Also, if you do not have a substantial volume of this traffic, it will make for a loss in efficiency and a consequent higher cost per thousand units, because your traffic force must be provided on a more liberal basis to protect the speed of answer.

Left to right, Mrs. Milton Vail of Springfield, Mo.; Mrs. H. A. White of Lincoln, Neb., and Mrs. C. H. Daubendiek of Jefferson, Ia.

Your traffic department must also estimate the number of trunks and toll circuits required for DDD. It should be remembered that these circuits must be provided on the same basis of delay (1 in 100) as the trunking through the local dial unit. In making such estimates, your traffic department will have projected the anticipated number of messages, as well as attempts, and will also include a factor for toll stimulation. In some instances, the stimulated toll traffic has been as much as 20 per cent.

Your engineering department is now in a position to lay out trunking plans and make an estimate of the costs involved in providing the toll and trunk circuits for your ticketing equipment.

You may want to get bids on the three general types of ticketing equipment available, or you may want to decide that a particular type is most suitable for your operations. The three general types refer to automatic identification of the calling number, operator identification of the calling number, and identification by the subscriber dialing his own number into the ticketing equipment. In addition, there is also the consideration as to whether you

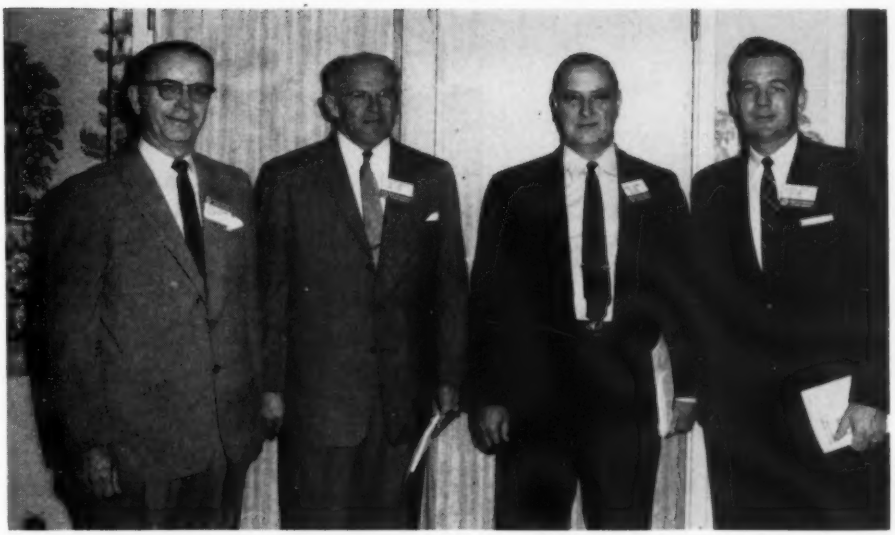
*Mr. Beck is Vice President-Operations of the West Coast Telephone Co. of Everett, Wash.

want equipment that will be limited in its operation to a local area, or whether you want equipment that will be compatible with the national DDD network. It is our opinion that the subscriber identification type of equipment should not be considered for use in the national DDD program because of the dialing burden placed on the customer. For instance, with a called and calling number of seven digits, plus an access code of three and an area code of three, such an arrangement would require the customer to dial 20 digits.

Advantages of the fully automatic identifying system are as follows: (1) Elimination of operators with a consequent reduction in operating costs; (2) more positive identification of the calling number; (3) greater speed in completing calls due to the elimination of time taken by the operator to key in the calling number; (4) better public relations because of the more positive identification of the calling number.

Advantages of the operator identification system are as follows: (1) No special equipment required at CDO's, therefore, less initial cost; (2) no requirement for special dials or other special equipment at the subscriber's instrument to identify a position on a party line; (3) existing toll positions may be utilized to provide for both toll and operator identification operations; (4) lesser space required in equipment rooms.

Also, during your early planning, it is necessary to look at the billing problem to see whether you will have lesser or greater accounting costs. If you do not have mechanized accounting equipment, you will probably want to have all of your automatically ticketed calls reproduced on a toll ticket similar to the one you are now using. If you already have electronic or machine accounting equipment, you might well find, as we did, that you will want to process all of your toll tickets through your mechanized equipment. We have arranged for all of our DDD calls to be reproduced on cards by feeding the information stored in the automatic toll ticketing equipment to an automatic tape-to-card punch. The residue of toll calls is punched up as the toll tickets are received in the accounting department. All of the punched cards are then electronically sorted by telephone number, after which the subscriber's toll statement is prepared on a tabulating machine and collated with his monthly exchange card. In this connection, it is well to note that with such machine accounting methods several days time may be saved in producing the subscriber's bill. This is because at the end of each billing cycle the punched cards can be quickly sorted and the toll statement prepared on the tabulating machines much faster than any method of which we know of manually sorting and typing up a toll bill.



Left to right, O. E. Koecher of San Antonio, Tex.; Philip Shea, Arnold Desnoes and J. P. Reilly, all of New York City.

Should You or Shouldn't You?

With the steps just outlined having been taken, you should now be in a position to determine whether the savings in operating costs are sufficient to outweigh the carrying and operating charges of the plant and equipment necessary for your automatic toll ticketing installation.

After the Decision

Once you have decided to proceed with the installation of ticketing equipment, there are many enginering problems to be faced. Included among these are the following:

(1) *Full Intercept.* It is desirable that all vacant, changed or disconnected terminals, as well as vacant selector levels, be intercepted. This is a much greater problem in terminal-per-line offices than in terminal-per-station offices. It is desirable to have all changed or disconnected numbers intercepted by an operator, however, you may wish to consider the use of recorded announcements which give the customer the necessary information or instructions as to how to obtain the wanted number.

(2) *Proper Signals.* The problem of proper signals has just recently been considerably reduced with the announcement by the Bell System that they will no longer use flash and tone, but will use tone only. Things to be considered, therefore, are the 60 and 120 IPM tone for line and selector level busy, respectively, as well as tones for NC conditions; no such number tone, and vacant code. Other signals to be considered are disconnect, off hook, on hook, start dialing, stop dialing, dial tone, recorder and ring-back, as well as the use of recorded announcements for unassigned codes, unassigned numbers, overloads, or emergencies.

(3) *"2-5" Numbering.* Nation-wide DDD contemplates the use of the two-letter, five-digit numbering plan. Local ticketing networks can be operated without the use of "2-5" numbering, but it is best to look toward the ultimate of the two-letter and five-digit system. Assignment of preliminary digits and the corresponding prefix names should be coordinated with the Bell System for your numbering code area. In selecting your prefix numbers, it is well to keep in mind the possibility of future extended area requirements, as well as Direct Distance Dialing so that all code assignments will, insofar as possible, be suitable for your future plans. Then, too, consideration should be given to assignments which will use a minimum amount of equipment and not result in unnecessary ranks of switches.

(4) *Compatibility.* Care must be exercised to be certain that your ticketing equipment not only works satisfactorily in your own network, but is so designed and equipped that it can operate into foreign areas. Particular attention should be given to operations into 4-A crossbar equipment and your engineers must be sure that no difficulties will be encountered in timing between two different types of equipment.

(5) *Transmission.* It must be remembered that with automatic ticketing equipment no operator is on the line to observe the quality of transmission. Therefore, extreme care must be exercised to insure that the transmission characteristics in your system are such that when operating into the over-all

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Engineering and Economic Aspects of Microwave Radio

*By E. H. DANNER**

(An Engineering Conference Address)

MY TOPIC, microwave radio, is certainly a dynamic one. For microwave is one of the fastest-growing services—one of the most exciting new tools—in telephony today.

When I use the word "new" in referring to microwave, I don't mean that in the full literal sense. Because, even though microwave came into the telephone industry just within the past decade, it already is being widely used. In fact, there's microwave operating in every state today.

More than 25 Independent companies have point-to-point microwave systems in use, and some of these are very extensive installations. Microwave now provides 22 per cent of the long distance telephone circuit mileage of the Bell System, and 78 per cent of its intercity television circuit mileage. By 1962—five years from now—Bell expects the percentage of its long distance circuit mileage provided by microwave to jump from the present figure of 22 per cent to 40 per cent. And, by 1967, the percentage of microwave will be 55 per cent.

I have no figures which accurately forecast the growth of microwave use by the Independents. But it's going to be sizeable, of that we can be sure. Independents have been rather slow to get their feet wet in radio. But, now that some have tried it and found it very much to their liking, I believe a lot of others who have held back will be getting into the swim soon.

While there are millions of miles of radio in use today, there is still an air of newness about microwave. New microwave equipment is being developed and introduced, some of the higher frequencies are still too new to be in use yet, and there are many new applications for microwave which will be made in the years ahead.

The future course of microwave use by the common carriers is perhaps being charted at this very moment by the Federal Communications Commission. Right now, we don't know whether the FCC is going to grant additional frequency space that has been requested and is so urgently needed by common carriers. We hope—in fact, we believe—new frequency allocations will be made for common carrier fixed and mo-

PRESENT ALLOCATIONS	PROPOSED ALLOCATIONS
890 - 940 mc Broadcasting and Fixed (ISM 915 mc)	890 - 940 mc Common Carrier Fixed
3500 - 3700 mc Mobile (Except TV Pickup)	3500 - 4200 mc Common Carrier Fixed
3700 - 4200 mc Common Carrier Fixed	
5925 - 6425 mc Common Carrier Fixed	5925 - 6425 mc Common Carrier Fixed
6425 - 6575 mc Mobile (Except TV Pickup)	6425 - 6575 mc Common Carrier Fixed & Mobile
7050 - 7125 mc Common Carrier TV Pickup & STL	7050 - 7125 mc Common Carrier TV Pickup & STL
10550 - 10700 mc Fixed & Mobile	10550 - 12200 mc Common Carrier Fixed & Mobile
10700 - 11700 mc Common Carrier Fixed	
11700 - 12200 mc Mobile (Except TV Pickup)	
12700 - 13200 mc TV Pickup & STL Available Conditionally to Common Carrier	12700 - 12875 Common Carrier TV Pickup & STL
16000 - 17850 mc Fixed & Mobile	16000 - 17850 mc Common Carrier Fixed
26000 - 30000 mc Fixed & Mobile	26000 - 30000 mc Common Carrier Fixed

Fig. 1

*Mr. Danner is President of General Telephone Co. of the Southwest, San Angelo, Tex.

bile services. But, just when, is anybody's guess.

As you know, the FCC last May began a full-scale hearing in the matter of allocation of frequencies in the bands above 890 megacycles. This hearing continued during the summer for 11 weeks. In June, the case for common carriers was presented by representatives of the USITA, by Lenkurt Electric Co. and the American Telephone & Telegraph Co.

Fig. 1 shows, in the left column, the present allocations for common carrier service above 890 megacycles; and, in the right column, the allocations proposed by the telephone industry. At first glance, it may seem that there already is a lot of frequency space available to us. But when you look at the chart closely, you realize that much of this can't be used today.

More than half of the bands listed here are in the higher frequencies for which there is no commercial equipment available. The engineering work at those frequencies on the lower half of the chart is still in the experimental stage. Eventually, we should be able to use them. But it's going to be some time yet. And, that doesn't help our immediate problem.

You will notice that, except in the extremely high frequencies, there are only two bands allocated to common carrier fixed services. One is the band from 5,925 to 6,425 megacycles. We couldn't do much planning at this frequency until just recently because there wasn't equipment available.

The other band for fixed service is 3,700 to 4,200 megacycles. That hasn't been practical for point-to-point systems because it's been used for the transcontinental microwave network which carries television signals and large groups of voice circuits across the country.

So, during the past five years, the common carriers, in order to provide point-to-point microwave service, have had to use a band they share with others. This is 890 to 940 megacycles, a band that is ideal for telephone light-haul radio routes—or skinny routes, as they are often called. There are approximately 75,000 voice-circuit miles being operated by common carriers in the 890-940 band today. Our company has microwave operating at this frequency. So do two dozen other Independents and several Bell companies.

Left to right, J. R. Fox of Waldron, Mich.; Mrs. Fox; W. G. Wright of New York City, and J. E. Garner of Rochester, N. Y.

As you can see from Fig. 1, we are hopeful that the FCC will allocate some additional microwave frequencies for fixed service. In particular, we need immediately the 890-940 band on a primary basis.

At present, this frequency band is allocated primarily to Industrial, Scientific and Medical Service (ISM). So if the common carriers now using the band are interfered with by ISM devices, no protection will be received from the FCC. In other words, common carriers in this band are using it on a secondary basis. However, no use has been made of the band yet by ISM, and the commission has taken actions to minimize the possibility of interference.

When the 890-940 band was allocated to ISM in 1947 on a primary basis and to common carriers on a secondary basis, it was believed that the two could operate together in this region without serious interference. But, it's now realized that this is not possible. No electronic stoves, or other ISM devices, have been manufactured for operation in this band, and it's not likely that they will be before the FCC resolves the allocation problem. There may be some decision on this before the end of the year.

Testimony presented to the FCC has pointed out that a primary allocation of the 890-940 band for common carrier fixed service is needed not only for the continued operation of existing systems, but also to provide for additional stations. There are many situations where frequencies below 1,000 megacycles provide the only means of achieving satisfactory point-to-point service. The propagation characteristics and reliability of 890-940 are required particularly for over-water routes and in difficult terrain where long hops may be necessary.

Until a few years ago, many telephone men considered microwave as something to be used only on long routes or where great numbers of circuits were needed. This feeling began to change in 1951 when the first microwave system was developed specifically for short-haul and light-route applications by common carriers. Since then, the use of microwave for these purposes has increased, slowly but steadily. Great strides have been made, technically as well as economically, in improving radio and channelizing equipment. Microwave is a well-accepted means of handling increasing traffic requirements today.

But, to use a time-worn phrase, "You ain't seen nothin' yet!" In the years immediately ahead, you are going to see a lot more use of microwave for relay of traffic over medium and light-haul routes. In fact, it's been predicted that during the next decade the use of radio for short-haul intercity purposes will reach proportions at least as great as the use on long heavy routes.

Left to right, A. F. Boyd of Lexington, Ky.; Miss Kathryn Journey and Miss Elizabeth Journey, both of Higginsville, Mo.

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Furthermore, you are going to see microwave used for many types of local services. These are among the new applications for microwave to which I referred earlier. And this is where the extremely high frequencies should find their greatest use. We know that as frequencies get higher, the distances over which signals can be reliably transmitted become shorter and shorter. In the spectrum between 16,000 and 30,000 megacycles, for exple, I am told that it may be necessary to put transmitter and receivers only a few miles apart. This would not necessarily cause an economic problem, because this part of the frequency spectrum could be used for local service to transmit between short points within a city or a small area.

Many of you probably have been thinking of those local service needs in the future, just as we have been in our own company. There is certain to be a local demand one of these days, and it would behoove every Independent to be doing some thinking and planning for it now.

There already is beginning to be some demand for circuits for data transmission and for closed circuit television by business and industry. We are entering an era of automation. Computers and other devices are rapidly coming into use for the processing of information. Data, in various forms, is fed into a central point where it is processed and eventually transmitted out again to the places where it is required. In order to do this it is essential to have good communications. It is natural for a company in need of data transmission facilities to turn to its telephone company because it will need lots of circuits, and they must be good circuits. Toll-quality circuits—the kind microwave can provide. The government and the armed forces also need data circuits. Some of you may be providing circuits for SAGE.

Just as microwave is handling much of the transmission of television signals for broadcast purposes, so can it fulfill the future need for circuits for other forms of TV. Closed circuit TV is expected to bring a growing demand for broadband circuits in local areas, and this again will mean more microwave facilities.

And, don't forget about Phonevision —or whatever other name may be given to the gimmick which will make the telephone an instrument for visual as well as audio use. This is already possible, although it's not yet ready for commercial use. However, it's likely that it will be before too many more years pass. I expect to see an attachment for visual purposes on my telephone and a lot of others within the next generation.

W. H. Brady of Creston, Ia., and Mrs. Leo Cleary of Evanston, Ill.

What about some of the other new applications for microwave in the future? Well, one of the things that is being discussed is the possibility of using it for various types of local circuits. These might be trunks between central offices, between remotely located switching centers, between a switching center and a central office, or even for circuits to a customer's premises. Frequencies between 16,000 and 30,000 megacycles are being counted on for these local transmission facilities.

Bell Telephone Laboratories has been doing experimental research at those extremely high frequencies, and it reports some promising results. While the attenuation at these frequencies may limit radio hops to distances of only a few miles, there are some advantages to be found in this. Since these short microwaves don't travel far, the same frequency might be used several times within the operating area of a company. It would be possible to use relatively low power, compact transmitters and receivers, small towers and antennas. It might be feasible to mount the whole package on a building or a telephone pole. Bell Labs reports that it is doing research on a microwave repeater system for short-hop service which is essentially a "pole-line radio relay." Such a system might provide rural service.

Microwave also is needed in the future for mobile service—on land, at sea, and in the air. It is hoped that the FCC soon will take action to allocate adequate frequencies for mobile radio. Engineering considerations warrant use of lower frequencies for land mobile service. Frequencies above 890 megacycles are not considered too good for this particular requirement. However, they probably would be all right for air-to-ground service. Statistics show that in the United States there are approximately 64,000 civil aircraft and a little more than one-fourth of these are private planes used for business transportation. There is a demand for public telephone service by many of the people owning and operating planes, but the only way in which air-to-ground radio can be provided now is through use of certain channels shared with maritime service.

I have been discussing various facets of microwave, with emphasis on the future needs it is expected to meet. In the time remaining, I would like to talk a little about the engineering and economic aspects of microwave as it's being used today for point-to-point service. This, of course, is the application for which almost all microwave is being used by Independents.

While our company has two microwave installations, I've actually had only a limited amount of first-hand experience with radio. However, for several years I've taken a personal interest in it, and I have devoted considerable time to checking our own engineering studies and those made by other companies, including AT&T. I've talked to equipment manufacturers, to radio engineers who have helped design and install systems, and to officials of other companies who are using microwave.

I keep hearing of new reasons why microwave is becoming an integral part of many Independents' toll plants. Just recently, the president of a western company said one of the chief reasons his company would be using more and more microwave is because it requires no right-of-way. He explained that in his territory it is not always possible to get a right-of-way along roads, especially the new superhighways and some of the other major highways being financed with federal aid. In other words, you can't always put up a pole line along a road. And, if you have poles already up, you may be required to do away with them entirely when a road is widened or improved as part of the federal highway program.

You probably are aware that microwave usually is the best means of obtaining new circuits in rough or uninhabited terrain. Our company now has an installation in Jacksonville, Tex., furnishing circuits to Stryker Dam, which is 17½ airline miles away. It is a heavily wooded area where there is no designated right-of-way. To build physical facilities, we would have had to go into the territory with a bulldozer after obtaining right-of-way clearance. The physical circuits would have been 25 or 26 miles and would

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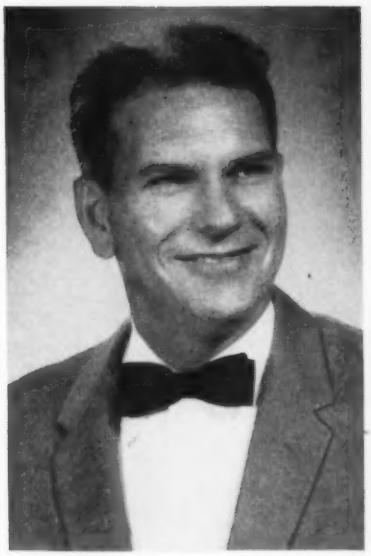
Values of Continuing Education



*By H. R. McDONALD, JR.**

(An Engineering Conference Address)

THIS PAPER is an effort to point out values of continuing education for the Independent telephone industry. Special emphasis is made in regard to participation in such programs by the small Independents, as well as the large. One other point is to show that the continuing education program, sponsored by the USITA, which was and will again be held at Michigan State University is truly opportunity knocking at your door. These telephone engineering management conferences could and should be the cornerstone of all our educational programs in the future.

At this point, I would like to enhance your confidence in the value of continuing education. To do this, let me recall to you our development and growth over the past years. Many of us in the telephone business came into it with varied backgrounds. Some were reared into the business, some came in to make money, and some of us did not know what we were getting into.

How did I get into the business? I came in through ignorance. From that time on my education has certainly been continuing. There is no doubt that the three years of mechanical engineering background came in handy. With that it did not take much more than a pair of pliers, a screwdriver, and a limited amount of tools to keep a delapidated 150-station magneto exchange going. As many of us know, there is more to the telephone business than keeping up a physical plant. Actually, we did not know we were broke until we began keeping books.

Naturally the first phase of our education was that of the physical plant. Good maintenance kept the existing subscribers off our necks and the improved service brought in new subscribers. The next phase of our education concerned itself with bookkeeping and accounting.

Now, we find ourselves in a half million dollar business. Many of you have several times that amount invested. Think of the problems that came with your growth. Think of the decisions you had to make. Too many of us were so involved in keeping our heads above water that we could not focus on an objective. Think how much easier those decisions would have been had we had a broader concept of the business. If we had money, we could have hired trained personnel had it been available.

The trouble is that you do not hire telephone personnel. You hire an engineer, an accountant, a bookkeeper, or some bright high school student and then teach him telephony. If you cannot afford to do this, then you must learn to do the many things yourself. In either case, you are involved in a continuing education process. If there had been no value in your education, you would have fallen by the wayside many hard miles back. The value of continuing education is most exemplified by the number of our top people who have had no formal education. Many of our leaders today are of that group. More significant is the fact that they realize the value of and are pushing as hard for education programs as anyone else. If you need to convince yourself, observe your present position. Are you satisfied? How much of your success is attributed to your continued education?

What am I doing up here? There are many of you out there much more qualified to talk on this subject. I am here because I am one of the smaller Independents. Our company has slightly less than a thousand stations. I am here because our company was the smallest to participate in the program at Michigan State University this past July. Further, I am here to encourage other small companies to participate in the future conferences because we have so much to gain.

After attending the telephone engineering management conference, I was able to put a finger almost directly on errors we made that amounted to from 10 to 15 per cent of our total investment. In our case that would be between 50,000 and 75,000 dollars. In spite of this we have been told that our plans and procedures were very good. That is a little hard for me to swallow, but it indicates that there are others who are worse off. This is a large percentile of aggregate errors in planning and judgment.

However, we are talking about modest investment compared to many of you. What would a 2 to 5 per cent error mean to your company? If this school helped you to save your company 2 per cent it would be worth several times its cost. There is no doubt in my mind that this conference could do it.

Our small companies need to take part in these conferences because we do not have enough personnel nor a large enough operation to establish adequate training programs. Not only that, on our own premises we do not get around to doing it. Something is eternally turning up to distract us from the concentration needed to study. Too many of us are one-man organizations. In the larger companies, your current duties will not permit you much time in company-planned programs. In my opinion, we are often so close to the job at hand we miss the purpose of our

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*Mr. McDonald is President of the Halls Telephone Co., Inc., of Fountain City, Tenn.

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The Future of Engineering Education

*By J. D. RYDER**

(An Engineering Conference Address)

ENGINEERING education began about the middle of the 18th century with unorganized training of apprentices by the early builders of roads in France, and by the early builders of steam engines in England. From this early beginning has come, in a period of 150 years, our modern system of engineering education, probably most adequately exemplified by the engineering schools of the United States.

Among the early apprentices were a few who wished to learn more of the "why" behind the devices and methods which they were using. These men were the early investigators of much of our engineering phenomena. Through the 19th century the most curious individuals of each generation added to our meager store of knowledge. As we progressed, we learned why the early rule-of-thumb, or the empiricisms, worked, or we learned areas in which they would not work, and eventually discovered much of our scientific knowledge of nature. The movement away from empiricism and rule-of-thumb to fundamental scientific fact has continued and accelerated by a realization of the tremendous breadth of opportunity existing to graduating engineers of the modern scientific age.

No longer is it possible to narrowly prepare a graduate for a specific field of work. We have seen in the past that some men trained for narrow applications are lost when such an application becomes of lesser importance in the engineering world. To its day, the Corliss engine was a model of perfection, but where are the Corliss engines and their designers today?

We have been looking backwards; perhaps we are even looking backwards at the steam turbine in an age actually concerned with jets and rockets. We may possibly be seeing the last 25 or 30 years of the life of the steam turbine; certainly some developments of the nuclear energy field hold considerable progress for the future attainment of electrical energy directly from the atom. It is this continuing progress that makes dangerous the education of any of our engineering graduates in terms of the things or the "hardware" of the past. Gradually, it is becoming apparent that today's students are the engineers of tomorrow, this fall's freshman class will be practicing engineers in the year 2000. We have also begun to learn that the backward look educates too often in *what cannot be done*, whereas the forward look to the future teaches of *what must be done*.

The stable, nicely bounded, empirical form of engineering education of the early part of this century, a time of pleasant relationships and repetitious teaching for engineering faculty, has now largely disappeared amid a modern rat race of new discoveries, new principles, and research looking to devices of the future. Engineering education has only begun to realize that the United States is building a new form of civilization. We have had civilizations based on slavery, on the spoils of conquest, on the gold of a new world, and on the profits of colonial development. Ours is the first civilization based on the product of our own brains, on conquest of the science of nature. We have also begun to realize that the engineer is in the forefront of the tremendous battle to prove that our form of civilization, based on science, is better than another form based on the exploitation of the individual, and that it is the engineer who can win or lose this battle for us.

There are, of course, other reasons for the modern trend in engineering education, one of the most evident being the terrific breadth of the field of engineering of today. A civilization based on a raw material economy has small use for engineers, but a civilization based on manufactured goods and industry can only live because of the engineer. Most of us fail to realize the tremendous progress which has been made in our move to a manufactured goods economy and the high level of the platform from which our modern graduates take off. A review of a few of the accomplishments of our engineering civilization should adequately demonstrate that an engineering education of today cannot be what it was in 1920. For this review, I shall choose the electronic industry, closely related to the interests of the telephone industry, and one which has grown up from almost nothing in our own lifetime.

We can all remember the early 1920 years, when radio reception meant a crystal detector or a single tube and a pair of headphones. The year 1922 serves as a suitable bench mark, and the year 1956 serves as a point at the other end for which statistics are available.

In 1922, the electronic industry finally succeeded in producing one million vacuum tubes of not over four or five basic types. In 1956, our production was in excess of 600 million tubes of several thousand types, many of them employing techniques where the entire production line work was done under a microscope, in conditions of hospital cleanliness. In 1922, there were only 400,000 radio sets of all descriptions in the United States. To-

*Mr. Ryder is Dean of Engineering of Michigan State University, East Lansing, Mich.

day there are 143 million radio receivers. In 1922, there were only 2,000 radio transmitters, in 1956 there were 1,250,000, of which over 300,000 were on wheels. To come up to more recent years in which our memories are undoubtedly better, as recently as 1946, there were only five television stations and 8,000 television receivers in the United States. In just 10 years, this fantastic industry, based solidly on engineering, has raised those numbers to 503 television transmitters and 42 million television receivers.

Using the same base points of 1946 and 1956, the number employed in the electronics industry has increased from 250,000 to 1,750,000 and the annual business of the industry from 1 billion dollars to 12 billion dollars where it is now our fifth largest industry.

A major company in the electronics field states that 80 per cent of its present products were unknown as recently as 1946. This certainly well demonstrates the contribution of the modern engineer.

We might look at another area of this amazing industry, one that holds even greater implications for the future of our scientific civilization, namely the electronic computer. The first such electronic high speed computer was completed in 1943. It contained 18,000 vacuum tubes. The same job can today be done with 2,000. Present-day production exceeds one computer a day, and back orders of a thousand computers are on the books of the industry.

An important measurement of the capability of a computer is the size of its memory, in terms of basic bits of yes and no information, and the speed with which these bits of information can be extracted. One present-day computer has a capacity of 20 million of these so-called bits, any one or a small group being recoverable in 14 seconds. Another computer, widely employed in business work, has a capacity of five million bits and it can recall any group of 20 of them in one second, which is slightly faster than it is usually possible to recall your wife's grocery list. We are presently completing a computer at Michigan State University, with a not exceptional memory capacity of 40,000 bits, any 40 of which can be recovered in twenty-millionths of a second.

To go further with statistics from this computer with which I am familiar, it can perform 87,000 multiplications of 10-digit numbers per minute; it can perform 600,000 additions or subtractions of such numbers per minute. As a further example, it can solve a set of 40 simultaneous equations with 40 unknowns in approximately three and one-half minutes.

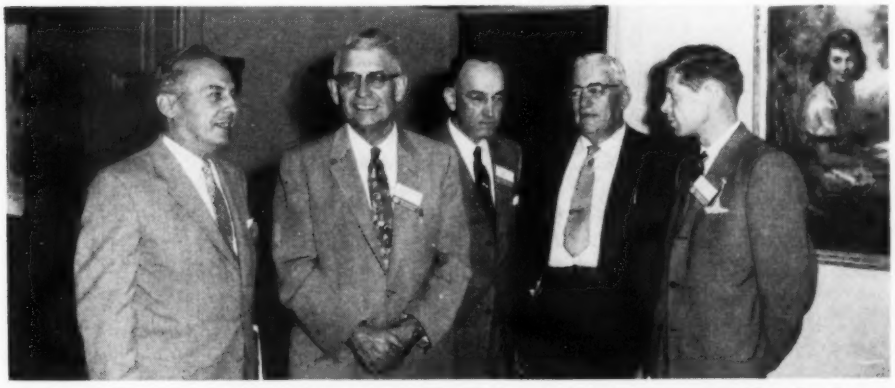
The chief competitor of the electronic computer is the human brain, estimated to have a memory capacity of 10^{13} bits, any one theoretically recoverable in about 0.1 second. It occupies about 1/20 cubic foot, requires 0.25 watt of power for operation, and can be hired at a cost of perhaps $15 per day. Such a good clerk can multiply two 10-digit numbers, and record the answer at a rate of about one operation per minute, aided by modern mechanical calculating equipment. Thus the cost per operation becomes three cents. The electronic computer mentioned above can perform 87,000 such operations per minute, at an operating cost of perhaps $1.60. To perform these 87,000 multiplications with our human operator would take half a year of working days, and the cost would be over $2,000.

Left to right, E. S. George of New Brunswick, N. J.; Miss Vivian Ryden, TELEPHONY'S circulation manager; Robert McIlvane of New York City and P. M. Ferguson Jr., of Mankato, Minn.

Our future engineers have other problems to work on. Jet aircraft need anti-collision radar; with jets approaching each other at the rate of 1 mile in two and one-half seconds the problem is evident. The elimination of heat from supersonic missiles is another, since it involves the elimination of the heat at altitudes at which there is no place to put the heat. To a modern engineer, heat becomes a commodity, much as water, air, or electricity, to be handled, transmitted, and stored. To the engineer of 1920, heat was something from which work was gained.

The inertial guidance problem for the inter-continental ballistic missile is still another example of the top level engineering required of our future graduates. Since no control of this missile is possible after firing, it must operate accurately upon a system of dead reckoning, remembering where it started and where it has been, from which it can compute where it is, and from which it will know when it arrives at its target. This poses problems in mechanics beyond the level taught in previous years.

It is evident that the problems facing the engineer of tomorrow are more difficult and complex than those faced by our predecessors of 50 years ago—the easy problems have been solved and we are working at higher orders of difficulty. This difference, in order of complexity of the problem, is going to be much accentuated as we move into the age of computers. Here, we are faced not only with problems involving new engineering ideas, but with problems which could not have



Left to right, A. J. Falk of Washington, D. C.; W. R. Thompson of Toledo, Iowa; J. J. McGrath and C. E. Smith, both of Topeka, Kan., and L. E. Marrin of Winnipeg, Man., Canada.

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been solved at all in any man's lifetime before the day of the computer. These devices bring problems involving many man-years of work down into a few minutes or a few hours of machine time—thus the more complex problem not only exists and faces us—its solution is also possible and practical.

All the above has been introduced to establish the level at which our modern engineering graduate starts, and for which we in the universities must prepare him. I think it can be agreed that the preparation level of the 1920's or 1930's is not sufficient—based as it was on the steam engine or other outmoded hardware of the era. In our search for a common denominator which may be used to guide engineering education of the future, we have found only the fundamentals of science as given to us by nature on this earth. These principles are not going to change, whereas applications in terms of particular devices or methods are almost certain to change; in fact, by the time they can be taught in a university they are already out of date. This *trend* back to fundamental science is not a new thing, but the realization that the trend *exists* is new to many engineering educators and to many practicing engineers. The road of science seems to be the highway along which future engineering education will progress.

To adequately tackle the new job facing engineering education we must understand what this thing is that we call engineering. We have one definition which states that: "Engineering is the professional art of applying science to the efficient conversion of natural resources to the benefit of man." This is a rather idealistic definition, and I feel that the main difficulty with it is the presence of too many words whose meanings we do not fully understand. Certainly, there is nothing within that definition which tells the engineering educator what his job is, and I believe, as a result, we do not understand that job. To better understand, it seems to me that we should go to the definition itself and rewrite it. To this end, I propose, as a new definition for the field of engineering, the following: "*Engineering is the science and art concerned with the utilization of materials, energy, and men.*"

Left to right, H. E. Hageman of Lorain, O.; C. H. Daubendiek of Jefferson, Ia.; Ralph Reston of Lorain, O.; L. P. Hayner of Deerfield, Ill., and G. B. Foscue of Wilmette, Ill.

I propose, first, that man be elevated to equal importance with materials and energy as a concern of the engineer. No practicing engineer in the modern day can work in an uninhabited vacuum. He is inevitably entwined and concerned with other people; he supervises these people, he directs their activities. He must get from them the maximum amount of cooperation and finally he must design devices and develop new knowledge which will be utilized by, and be of great concern to mankind. Engineers must be prepared to work with people, they must be able to talk to the lawyers, to the cost accountants, to the presidents of their companies, not in engineering language but in the language of these other professions.

To the field of engineering education, the really important factors in this proposed definition of engineering are contained in the words *science* and *art*, and the university is in the position of asking what the part is that it should attempt. It would seem the answer to the question should be self-evident. A science is a body of knowledge, it allows understanding of the *why* of nature. An art is skill in the adaptation of things, an art teaches *how* to do. A university, by basic concept, is well fitted to the teaching of knowledge, and, therefore, it should undertake the preparation of the young engineer in the science, the *why* of things on this earth. An art is inherently foreign to the concept of a university; a university is removed from practice, and it would seem most logical that the art of engineering should be taught by the engineering employer, by industry. This is also logical in that it is on the frontiers in modern industry or in the engineering offices where the new art is originated.

The duty of the university is to teach the fundamental basic science; the duty of the engineering employer and of industry is to teach the art of engineering. To this end a recent publication of the Education Policies Commission of the National Education Association has recommended that "industry should undertake more of the task of specific job training than it has in the past assumed, seeking to develop such programs at a professionally sound level."

This method is going to pose problems, first, because this is not the way it has been done, and, secondly, because it represents actually a partnership between the university and the engineering employers in the complete educational process of the engineer. Working out the details of this partnership, particularly the methods whereby the university can aid the industrial employers in the educational process which must take place in the factory and offices, is going to take time.

(Please turn to page 125)

Left to right, W. Blashfield of Galion, O., Mrs. E. R. Dean of Hood River, Ore., and Mr. Dean.

Report of USITA Commercial Committee

*By K. L. LAWSON**
Chairman

THE COMMERCIAL Committee has not undertaken any major project during the year. However, it has concerned itself with several matters that are of vital importance. These have to do with the increasing prevalence of toll service abuse, the blanketing of the country with directory covers of every description, and lastly, the removal of restrictions covering attachments. These matters are not new, but they are still of current interest and require continuous attention.

Abuse of Service

Last year your committee urged all telephone companies to follow the Bell System in filing proper tariffs to make it possible to take effective action against flagrant violators of toll service. It is important now that both Bell System and Independent companies cooperate to the fullest extent in carrying out studies to uncover fraudulent use.

This procedure involves retention of all toll tickets covering uncompleted toll calls for designated periods. Most Bell System companies retain these tickets the first month of each quarter during the year. Many Independent companies are now doing likewise. The tickets are grouped in such a manner that they may be exchanged by companies where necessary. It is only through cooperation of this kind that usable positive information can be secured. All Independent companies are strongly urged to participate in these studies in order to minimize and prevent the spread of fraudulent toll usage. Annual losses from this abuse are conservatively estimated to run into the millions.

*Mr. Lawson is General Commercial Superintendent of the Lincoln (Neb.) Telephone & Telegraph Co.

Directory Covers

Manufacturers of novelties and others are extremely active in the sale of directory covers. One of the most popular types are now made of plastic with a certain amount of transparency. Most of these covers carry advertising messages. In some cases, an effort is made to provide sufficient transparency in order to maintain that the printing on the directory is not obliterated.

Unless this practice is checked, the loss in directory revenue can become considerable for the simple reason that regular directory advertisers expect to be protected from such infringement. It is disturbing to note that a recent court decision gave unlimited permission to the use of such directory covers. There are other decisions, however, which tend to protect telephone companies through recognition of unfair competition and violation of copyright. Proper tariff filings and vigorous prosecution of violators is the only effective means of combatting this menace.

Attachments

The recent court decision involving the Hush-A-Phone matter opens up the whole field of attachments. Telephone companies have recognized that they now can only hope to protect themselves against such attachments that are injurious to equipment or to the service. While this may sound innocent enough, the problem is complicated by the fact that devices of various types may be placed on telephone equipment scattered throughout an exchange. The problem then becomes the question of how to proceed to remove such attachments.

Your committee urges all the companies to discuss this problem with their regulatory body in order that they may be familiar with our problem. It is hoped that the various commissions will recognize that positive restrictions on attachments are important and essential for the protection of service. We observe, however, that one state commission has already requested telephone companies to revise their intrastate tariff filing to make it conform with the FCC order. It is to be hoped that action such as this will not become widespread among the states.

Report of Committee on Liaison With Private Communication Systems

Your committee has continued its efforts to improve relations with right-of-way companies and to work toward improving quality of private line services.

The committee was represented this year at the April convention of the petroleum industry and overtures have been made to assist liaison with the communications people of the power industry.

There are still some perplexing service problems to be worked out in the furnishing of high quality transmission. In many instances, private line services are used for multi-purposes, such as telemetering, teletype, data transmission and the like. In such cases, the customer must have circuits that are reliable, free from interference and of uniform high transmission quality. Otherwise, the information transmitted is of no value.

Marked progress is being made in long-haul circuits involving two or more separate telephone companies. Regular service inspections, use of uniform equipment and coordinated engineering are all very essential to proper circuit function.

The activity of the committee is a continuing one. Its members stand ready at all times to be of assistance in working out intercompany problems at any time.

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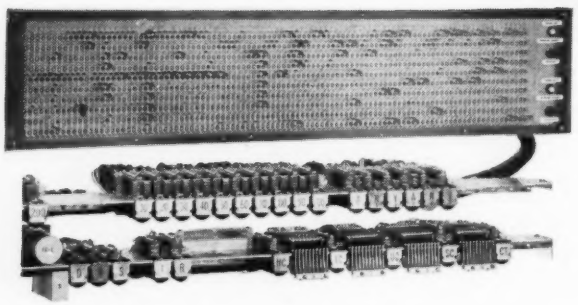
NOW AVAILABLE *at nominal cost*



Sectional View of Computer Intercept Unit for 100 Line TPL or 1,000 Station TPS Installation.

Advanced technique of printed circuity is used in this equipment. The Magnetic Impulse Counter is the basic unit of the computer register circuits, supported by standard telephone relay apparatus of recognized manufacture.

Congratulations to the U. S. Independent Telephone Association and its thousands of member companies on this 60th Anniversary Year.

Other UNIVERSAL Telephone Equipment:
DIGIT ABSORBER for 2-5 Numbering
Code-to-Selective RINGING CONVERTER

INDEPENDENT

UNIVERSAL 100% COMPUTER INTERCEPT

DIRECT DISTANCE DIALING
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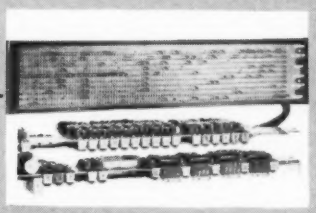

Buy the ultimate requirements in intercept equipment. Not "merely adequate" . . . not 20% . . . not 99% . . . but 100% intercept is the ultimate requirement for direct distance dialing. Universal Computer Intercept offers 100% intercept at nominal cost, compatible with any make switchboard, and easily inserted anywhere in the dialing train. The unit is completely factory wired and may be installed by regular maintenance personnel. Simplicity of design lends to minimum maintenance requirements.

CHECK THESE ADDITIONAL BENEFITS OF UNIVERSAL COMPUTER INTERCEPT

- ✓ Increase Schedule A Commissions.
  Your TPL will have the effective features of TPS intercept to add to your toll settlement.
- ✓ Increased Revenue through Increased Trunk Usage Time.
  Reduce the repeated attempts on long-haul toll calls that keep valuable toll switching apparatus tied up.
- ✓ Savings in Time and Material in Adding Intercept Service to your Operation.
- ✓ Intangible Advantages.
  - Immediate intercept of calls to busy lines for non-working or changed numbers on these lines.
  - Intercept of incoming toll calls by request of customer or commercial department.
  - Many others of commercial value.

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Taking a Forward Look

*By B. C. AMES**

(A Commercial Conference Address)

THE PURPOSE of my talk is to provide background information for the panel discussion on *merchandising* that will follow, and it seems to me that perhaps the most effective means of doing this is to ask and attempt to answer three very basic questions:

(1) What is merchandising?

(2) Why is it so important to us?

(3) How does it affect telephone operation?

Let's take a look at the first question to make certain that we all understand what merchandising really is. I don't want to spend a lot of time discussing all the things merchandising in the telephone business is not, but I do think it is important to say that merchandising is not simply intensified or high pressure selling. I mention this because I think despite many protestations to the contrary, this is the impression most people have of merchandising, and it is most certainly incorrect.

As I see it, merchandising really represents an entirely new operating philosophy for our business, and as such it naturally involves significant changes in many of our long-standing operating policies and procedures. Stated simply, I think merchandising is an optimistic philosophy that recognizes the burgeoning growth of the American economy and the profit possibilities inherent in this situation for any company that is willing to pursue a dynamic approach to the market.

Let's move now to the second question that I think should be answered; namely, why is it so important to us? It seems to me that the answer to this question should be based principally on economic considerations.

Until very recently, I think that, unconsciously perhaps, many of us have allowed our thinking and planning to be dominated by two concepts:

First, that anticipation of depression of the 1930 variety is a conservative basis for planning for the future, and

Second, that our rapidly expanding economy is simply a continuation of the postwar boom, and that it cannot continue over the long-pull.

But, actually, if we take a hard look at the factors contributing to the growth of our economy, it is apparent that these concepts are probably wrong and, therefore, dangerously misleading. Let us review briefly some of the more important factors that have contributed to our economic growth during the past six years—1950 to 1956.

(1) *A rapid increase in population:* 18 million people added to our total population during the past six years.

(2) *A substantial increase in our labor force:* 5,638,000 people added to our labor force—and it might be noted here that the annual additions to our labor force will accelerate from 800,000 a year to 1.2 million a year during the next 10 years as the huge baby crops of the '40's come into productive age.

(3) *Increased productivity:* Through technological advance, improved skills and more scientific management, we have increased our production of goods and services by 28 per cent during the past six years—three times the rate of increase of our available labor force.

(4) *Increased capacity to consume:* The rewards of our increased productivity have been broadly shared, resulting in an increase in our standard of living of 22 per cent in terms of constant dollars.

(5) *Increased mobility:* From a marketing standpoint, perhaps the most significant change is to be found in our increased mobility, a mobility that is to be found in two striking forms: *Geographical mobility*, in terms of people moving restlessly across the land in search of better opportunities and better living conditions; and *economic mobility*, in terms of people moving rapidly upward in earning capacity. Although these two forms of mobility may be studied as separate phenomena, they are inter-related to a major degree as to cause and effect.

During the past six years, 190 million people moved to new addresses—by all odds the greatest phenomenon of mass migration in recorded history.

During this same six year period, 12½ million consumer spending units moved into the $4,000 a year and above brackets, doubling the number and disposable income of those families.

This is by no means a complete list of the factors which could document the dynamic growth that surrounds us. It should be sufficient, however, to remind us that this growth is more than just a postwar boom and that it is likely to continue well into the foreseeable future.

And so, growth—unending growth—appears to be a natural, continuing, and predictable phenomenon in our country. Our growth line has been trending upward at a rate of 2½ to 3 per cent annually compounded. Actually, in the past 10 years our rate of growth has been running from about 3 to 3½ per cent, but most economists agree that a 2½ to 3 per cent annual gain in our economy is a reasonable basis for planning for the future. In effect, this means a doubling in the size of our gross national product every generation.

Most economists agree that there is no reason to expect a reversal of this upward trend, at least on a secular basis. Unquestionably, we will encounter leveling-off periods and adjustments, but then, we should not expect to reach our long-range objectives on straight-line projections. Many businessmen now

*Mr. Ames is Director of Merchandising of General Telephone Corp., New York City.

feel that the period of break-neck expansion to catch up with deferred wartime demands and new orders is over. Even so, very few of these men expect a reversal of the growth trend in the years ahead—a reversal that would stymie President Eisenhower's forecast of a 500 billion dollar economy within a decade. Indeed, most corporations expect the economy to break the 500 billion dollar ceiling (in terms of 1956 prices) in the early 1960's and to reach a level of between 550 and 600 billion dollars by 1965.

In view of these considerations, it would seem that inflation is a much greater likelihood than depression, and accordingly, a much sounder foundation for planning for the future. I'm not referring to a galloping inflation, of the type that plagued Germany in the 1920's, but rather continued slowly rising prices accompanying continued rather full use of our resources. In short, there is no reason then not to expect a continued rising trend in growth at something like the historic rate of 2½ to 3 per cent annually compounded, and a realization of a 550 to 600 billion dollar economy sometime in the mid-1960's.

Now, just what does all this mean to us in the telephone industry? To explain what I think it means, I'm going to have to resort to the use of some simple statistics. I know that statistical presentations are ordinarily a little boring, but I hope you will bear with me for a moment for I think the point I want to make is important.

Total operating revenues of the telephone industry have in recent years accounted for about 1.6 per cent of our gross national product (GNP). At the close of 1956 for example, our GNP was running at 412.4 billion dollars and total industry operating revenues were running at 6.58 billion dollars for the last 12 months completed. Now, as an industry our share of GNP has been increasing. In the early 1940's our share approximated 1.4 per cent, and

Left to right, Werner Zitzman of Munich, Germany; D. L. Solomon of Washington, D. C., and Peter Von Schacky of Munich.

I have seen statistical estimates that indicate that it is not unrealistic to assume that our share will reach 2 per cent during the period 1960 to 1965.

In 1956, operating revenues for the Independent telephone industry approximated 614 million dollars. This represents about 9½ per cent of total industry revenues. Assuming that the 600 billion dollar economy does in fact become a reality by 1965, and assuming that the industry percentage of GNP approaches 2 per cent, and assuming that our share of this figure stays constant (9.5%), we can expect our operating revenues at today's prices to move well over the billion dollar mark during this period (1.14 billion).

I would like to venture beyond these figures. I think we can get even more —much more. But, I also want to say that I think we could get less. We do not have an automatic claim on any specific share of consumer or business spending. The fact that the GNP rises does not guarantee that our share of GNP will rise also or even remain stable. It could fall.

I don't think it can be emphasized too strongly that we are not in any sense a true monopoly. We do not possess a natural or entrenched market position. Even in our own industry there are other businesses threatening to take potential sales away from us. Look, for example, at the 1955 and '56 editions of "New Sales Products and Ideas." The list of products on the market include everything from directory covers to home intercommunications systems. But even more important, in the consumer area particularly, we are in competition with literally hundreds of industries selling goods and services that are competing directly with us for a share of total consumer spending.

Many of these industries have shown a rather startling ability to out-compete us. Look at the record.

(1) About 90 per cent of all American families have mechanical refrigerators.

(2) About 80 per cent have automatic clothes washers.

(3) About 75 per cent have TV sets.

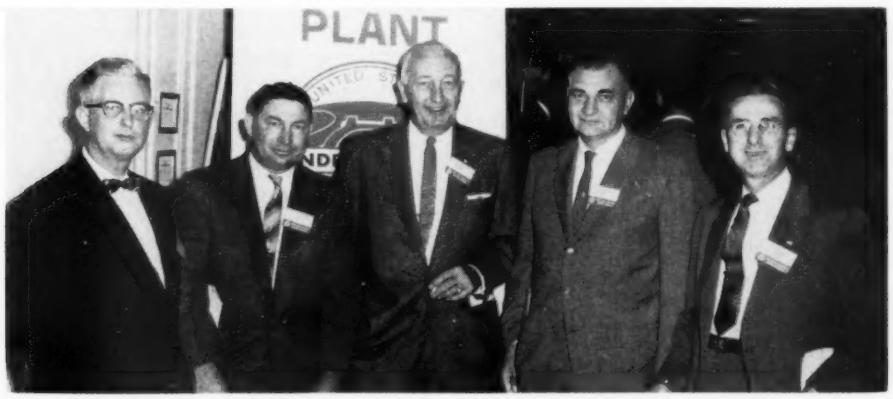
(4) Only about 70 per cent have telephones, and 50 per cent of these telephones represent service shared with others on party lines, and yet nobody is sharing those refrigerators, washers or TV sets.

Furthermore, none of these competing industries have accepted even 100 per cent ownership as a measure of market saturation. More than 98 per cent of our families have radios . . . and more than 70 per cent of these families have a second radio. And, look at the sale of portable radios—they're booming.

The TV industry is no longer concentrating on selling a first installation. It is upgrading, selling replacements, and above all, it is selling multi-set ownership: One for you and one for the kids.

Over 12 per cent of the car-owning families have a second car—the Ford billboard: "Four bedrooms, three bathrooms, two Fords."

Among our other competitors are industries selling such services as travel and vacations—now offered on the in-



Left to right, J. R. Yeager of Lima, O.; O. F. Kinsel of Bellevue, O.; H. P. Siebken of Madison, Wis.; P. N. Malmgren of New York City, and P. K. Fugate of Springfield, Ill.

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stallment plan. They are taking away spending power that might be ours.

I think it is important for us to realize that this competition for the consumers' dollar is very real. When the consumer considers primary telephone service—he doesn't have much choice—he is ours without any sales effort whatsoever. But, once he has his primary telephone he is a far more discriminating buyer, and we must compete directly with every other businessman that is after the money our customer is willing to spend for convenience.

Now, I'm not so naive to think that our customer sits down and consciously weighs a second automobile, or a second television set, or some other luxury or convenience item, against a second telephone, but his discretionary spending power is limited and with myriad opportunities to use it, he must decide somewhere along the line where his excess income shall be spent.

It is the safest prediction in the world that this competition will increase in its intensity. It seems to me that this suggests the conclusion that unless we fight for our share, for a growing share, of the consumer's spending power, there is a real possibility we could slip backward from the 1.6 per cent of GNP, mentioned earlier, to a smaller share. With our economy growing at the anticipated rate this could easily happen while our dollar revenues were increasing each year.

I think all of this points out very clearly that our industry is entering a truly decisive period in its history. We cannot continue to market scarcity. We must grow with the economy. We must merchandise our service as effectively as our most successful competitor. We must help our customers to recognize their real telephone needs in their changing living patterns, and we must be ready to serve these needs. I think only in this way can we obtain an increase in our share of consumer spending power. And, I think only in this way can we help to build the more favorable environment we need to secure the rates required to underwrite this dynamic growth at higher marginal costs.

Left to right, S. S. Long Jr. of Lexington, Ky.; T. A. Boyd of New York City; D. H. Lloyd and R. F. Kessinger, both of Lexington Ky., and D. A. Brown of Johnstown, N. Y.

Another way of saying this is to observe that the long-run path to maximum profits has three important dimensions:

(1) Expense control.
(2) Adequate rates.
(3) Merchandising.

I emphasized the third not because it is inherently more important than the other two, but because it is new to us, and has not been given adequate attention in the past. We have the know-how for the other phases of the job.

Merchandising in this sense means much more than aggressive selling. Selling is a relatively small, but important, part of the whole. It means market exploration, product and service development, profit-oriented sales programs, and above all, an acceptance of the concept that the market available to us is far beyond what has been realized in the past.

You will recall that the third question I wanted to answer was how does merchandisng affect telephone operation. You will also recall that I mentioned that full acceptance of the merchandising concept requires decisive changes in many of our long-standing operating policies and procedures. I would like to conclude my discussion by spelling out some of the changes in our thinking that I think are necessary if our merchandising program is to be successful.

Most important, I think that merchandising involves a change from a cost to a profit orientation. Cost concepts are deeply rooted in the telephone mind, and while I don't mean to suggest anything so silly as disregarding cost considerations entirely, the merchandising concept recognizes that cost control is not the only path to better earnings performance. There are many situations in which increasing expenses may lead to higher earnings, provided the increases are based on plans that are themselves the product of a knowledge of market and profit potentials.

Equally important, merchandising involves an administered change from positions of scarcity to positions of planned availability. By "administered" I mean planning availabilities in terms of the right products, in the right quantity, at the right time and place, and at the right price, not simply increasing the stocks with instructions to move the surpluses by "hard sell" methods. Not long ago, I heard one of our plant managers complain about having an oversupply of certain color telephones and he jokingly said, "If these merchandising people were on the ball, they would sell these telephones and get them out of my inventory." I I couldn't help but answer him by saying, "If you were doing a good merchandising job, you wouldn't have the oversupply to begin with." I mentioned this incident only to emphasize again that merchandising is not just selling —it's also planning to sell—and to point out that every department must participate in a merchandising program if it is to be successful.

Merchandising also means accepting

(Please turn to page 156)

Left to right, F. V. Lawson of Omaha, Neb.; Ralph Shriner of Tampa, Fla., and W. S. Bain of San Antonio, Tex.

Telephone Merchandising Training Panel

(A Commercial Conference Panel)

ONE OF the features of the USITA Commercial Conference was a panel discussion on the training of telephone employes to merchandise telephone service.

L. D. Densmore, vice president and general manager of the Central Telephone System and chairman of the USITA Merchandising Committee was moderator of the discussion. Panelists were John S. Davies of the American Telephone & Telegraph Co. and J. P. Borden of Charlottesville, Va., division director of safety and training of the Virginia Telephone & Telegraph Co.

Report of USITA Merchandising Committee

By COL. L. D. DENSMORE*

Chairman

IN THIS, our association's 60th anniversary year of service in the industry, it is natural that we review the historical paths we have followed towards goals of desired accomplishment. We can rightfully be proud of the progress made.

Your Committee on Telephone Merchandising reports, however, more as a commencement than as a valedictory.

The Merchandising Committee came into being in 1956. Our efforts then were directed towards consideration of the philosophy and concepts of present-day merchandising in various fields and in turn exploring the most effective means and techniques of applying and expanding those concepts within the Independent industry.

In our first report, we, your merchandising committee, set forth some fundamental considerations with respect to telephone merchandising.

We said:

"A merchandising program is not a mere selling campaign.

"It entails research to determine not only the needs and desires of the public but the potentials of the market for long-range planning and development.

"It encompasses the creation of new desires.

"It includes expanding and enhancing the usefulness of the service.

"It requires the use of various agencies in the promotion of these ends.

"It requires the training of personnel to implement the program and conduct the sales work."

We also said that merchandising—

"Is knowing and anticipating the communication requirements of our customers.

"It requires that we fully satisfy those requirements and wants.

"It includes creating and satisfying additional desires.

"It involves the establishment of a service tailored to the needs of the user.

"It requires an understanding on our part, which we must pass on to our present and prospective subscribers, that telephone service from one telephone instrument in a home or business establishment is inadequate."

We pointed out that merchandising entails research, promotion and training. We called attention to the fact that in the telephone industry we are unique and most fortunate in that we have at hand a potentially effective sales force and that we have only to train them.

The theme of our thinking and effort during this second year of 1957 has been on *training*. This is a vital phase in our programming and an element of merchandising to which we must all give our best efforts if we are to firmly establish the proper foundation on which to build a comprehensive and continuing merchandising program.

The merchandising portion of the commercial conference to be held at this convention is devoted exclusively to this important foundation stone—*training*. It is hoped that those attending will be able to take home something that will be of value to them in their planning.

The General Telephone System held a very fine merchandising seminar in New York to which several other Independent companies were privileged to send representatives.

The associated Bell companies have held training activities of various types in which representatives of our industry have been able to participate.

As these representatives return to their respective organizations and get their training programs under way, it is hoped that they, too, will find opportunity to expand the program to include an interested representative or two from neighboring companies. Through this spirit of industry-wide cooperation and assistance firm foundations will be laid from which a

*Colonel Densmore is Vice President and General Manager of Central Telephone Co., Lincoln, Neb.

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strong and comprehensive merchandising program can be pursued.

The training of our personnel must be on a continuing basis. As new advances in technology are made, and techniques of presentation are expanded, improved ways must be found to keep our employes abreast of the art.

At least one Independent company has established training schools and a program which not only provide the vehicle for training commercial people, but includes merchandising as an integral part of the regular training courses for plant personnel.

We submit the proposition that this same principle can be expanded to the largest segment of our work forces, that of traffic and accounting. Here, training programs are no doubt already in effect so that the merchandising aspect can readily be incorporated into the regular program as it affects the individual departmental employe.

Merchandising and selling must become an integral part of the everyday duties of every employe.

As the training program gets underway, it is vital that the trained personnel get into a merchandising activity without delay.

Whether this be an all-out sales campaign, limited drive for special services, or some feature of advertising or promotion, it is important for us to recognize that trained forces remain as shock troops until they are battle tested. Your employes' effectiveness will increase in direct relationship to the opportunities presented to exercise their training.

The training in sales techniques is important as a first step, but will come to naught unless put to actual test of service counseling which, in turn, results in the selling of adequate service.

The parting thought your committee would like to leave with you on this 60th anniversary is that while we are justifiably proud of the industry accomplishment of reaching the plateau, in 1957, of getting telephone service to 50 per cent of the nation's farms we still have the following challenging potential:

Fifty per cent of our farms are *unserved.*

Ninety-five per cent of the farms served have only *basic* (one telephone) service.

The impetus for encroaching on this potential must *start* with the owners, managers and operators. Get your organization trained and then start *selling.*

Our subscribing public will be happy with their telephone service only when their needs are *adequately* met.

The Sales Training Program in the Bell System

By JOHN S. DAVIES

WHEN I was invited to participate in this Telephone Merchandising Training Panel, and asked to discuss "Sales Training in the Bell System," I'll have to admit I became a little apprehensive. Training is a broad subject. To talk for a few minutes on such a subject is a real challenge in order to get the most out of the time available.

Now, this morning we're going to touch on many aspects of sales training in the telephone industry. We'll talk about training:

For business office people (which usually means selling to the residence or small business customer).

Sales training for the installation and repair forces—and

Training for those people who are normally concerned with sales to larger business customers. This involves training in selling complete communication services.

Selling in the telephone industry is a team operation—it's a job for the business office, it's a job for plant, for special sales forces, for directory sales people; in fact, it is a job for all telephone company employes, regardless of department.

As you know, the telephone industry has been merchandising and selling in varying degrees since its inception. During the past several years this activity has been stepped-up appreciably. Broadly, the approach is that of getting the right product, in the right place, at the right time and letting our customers know that we are, in fact, doing these things to better fill their communication needs—whether they are aware of those needs or not.

In fact, that's really where much of our selling as such comes in:

First: Focusing the customer's attention on *his communication needs.*

Then: Creating the desire in his mind to fill those needs for *his own benefit.*

J. S. DAVIES

Lastly: Getting him to act, to order now so that *he* may gain those benefits quickly.

The industry has made good progress in this direction—but, and I believe you will all agree, we as an industry, still have a way to go.

Because of necessity, for years following World War II, telephone companies simply took orders for their various services. Our people, both supervisory and non-supervisory, became accustomed to this way of doing business. Now, in an era of selling, the telephone team is being asked to stimulate customers to further discuss their ways of living at home or how their businesses function, in an effort to learn where and how our services can be of the most help.

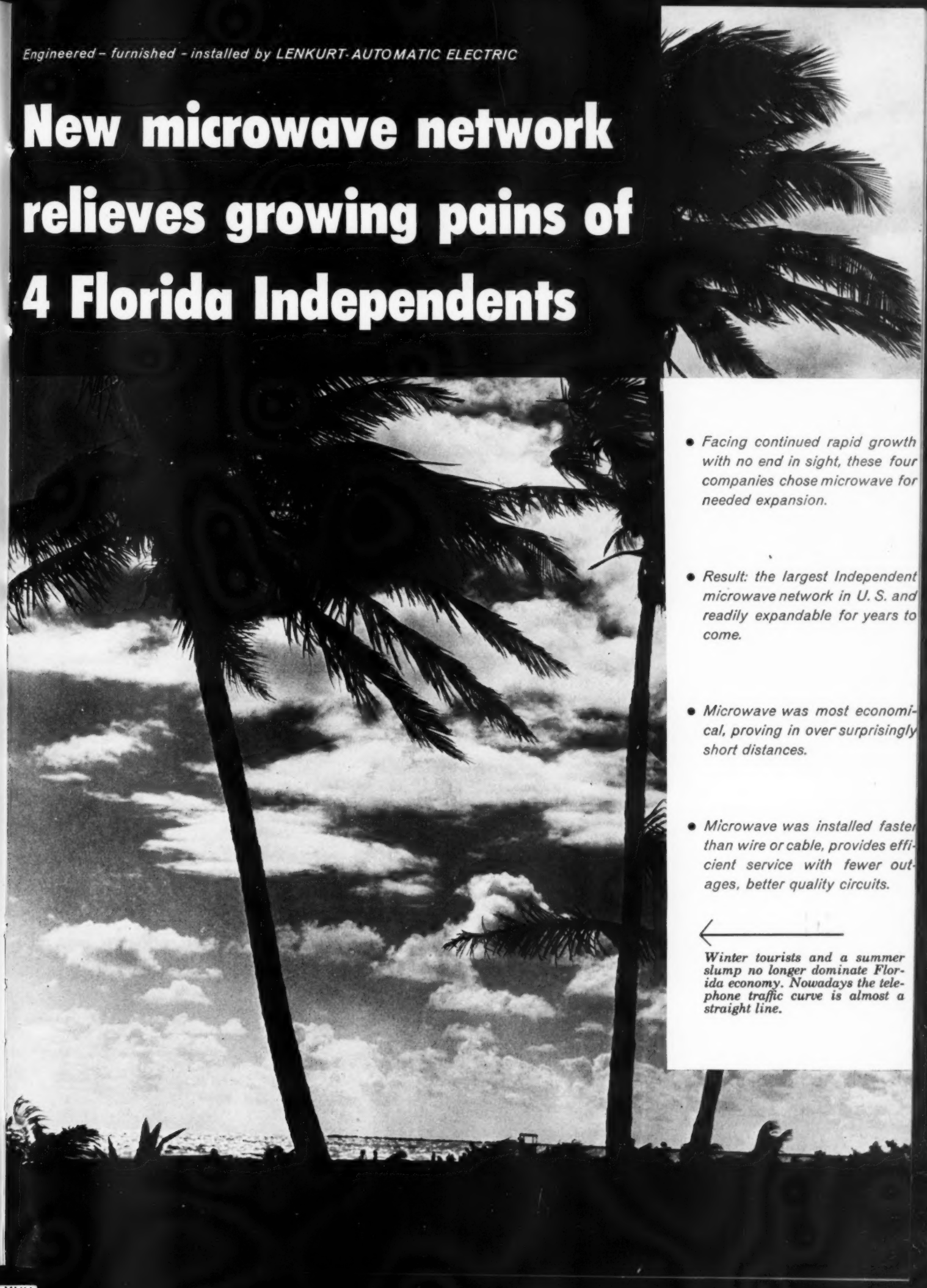
When a residence customer calls your company he expects you to recommend equipment and service that is tailor-made to his home. When such a customer calls in, he gets someone—usually a service representative—a bright young lady who is posting cash or treating accounts, or writing up an order. Now she has to drop everything and become Miss Telephone Company—smile, answer questions, find out what the customer is talking about and, then, artfully engage him in conversation in an effort to fact-find, to find out what his home telephone needs are so she can make a good, sound sales presentation. As you all know, this is no small job. And, yet, this situation not only involves the service representative, but it also confronts any telephone people doing this kind of work—such as the chief operator or agency manager in a small town.

Because of the diversified nature of the service representative job, there is sometimes a need for making sure that

(Please turn to page 76)

Engineered – furnished – installed by LENKURT-AUTOMATIC ELECTRIC

New microwave network relieves growing pains of 4 Florida Independents



- *Facing continued rapid growth with no end in sight, these four companies chose microwave for needed expansion.*
- *Result: the largest Independent microwave network in U. S. and readily expandable for years to come.*
- *Microwave was most economical, proving in over surprisingly short distances.*
- *Microwave was installed faster than wire or cable, provides efficient service with fewer outages, better quality circuits.*

Winter tourists and a summer slump no longer dominate Florida economy. Nowadays the telephone traffic curve is almost a straight line.

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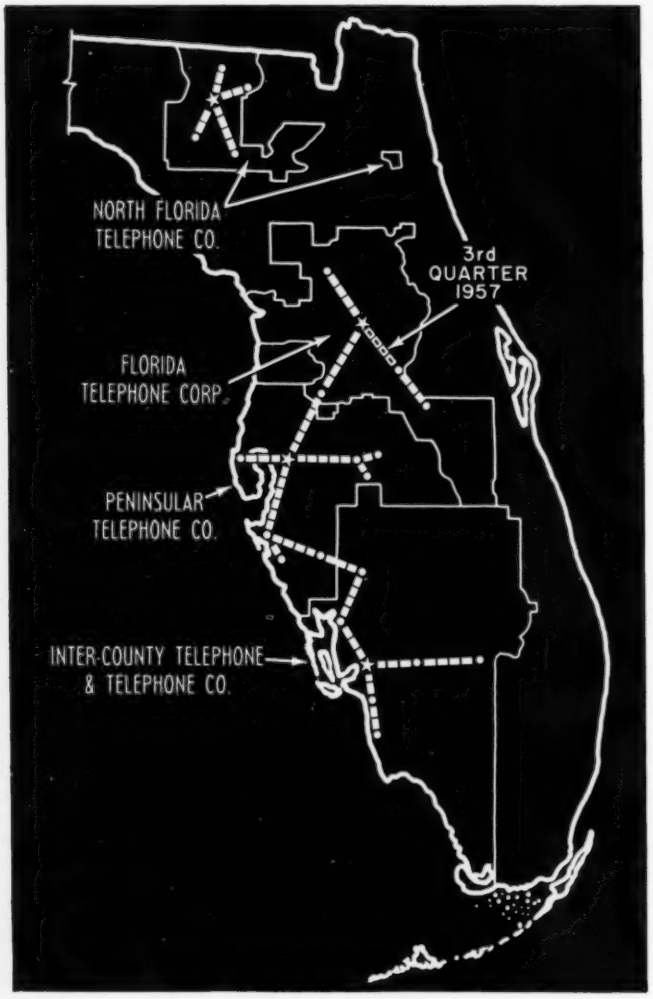


Microwave more economical and more expandable than cable or wire

Before turning to microwave as the most efficient way to expand, the four participating companies analyzed present and future circuit requirements, and made extensive cost studies of alternative methods.

Microwave the logical choice

Expensive retransposition of wire line facilities would not provide circuits for future expansion. Also, the more equipment there is on poles, the more it costs to move them—and an ambitious road improvement program is under way in Florida.

Laying additional cable would be too costly. A further drawback: some new circuits would initially be idle, causing the companies to pay for circuits before they were producing revenue. With microwave, the companies can quickly and easily add circuits as needed, in convenient multiplex groups. In the meantime, they won't pay for dead weight.

Microwave was quick to install—far faster than cable or wire. It often "proved in" over surprisingly short distances.

4 companies create largest Independent microwave network

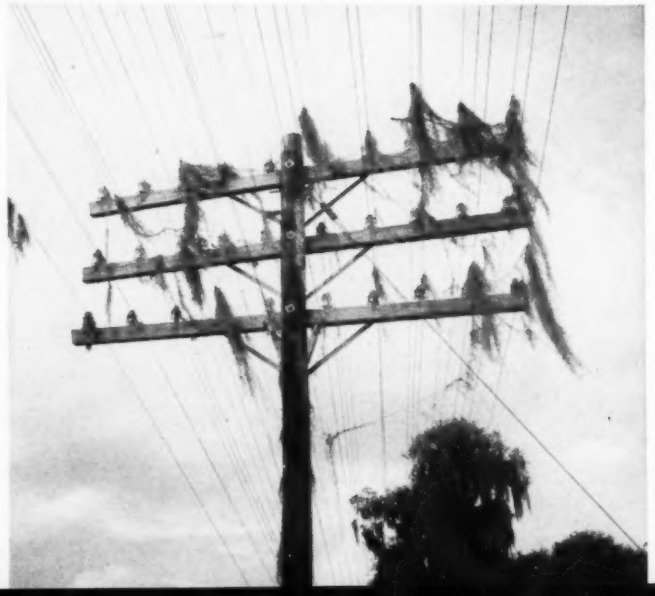
Peninsular Telephone Co., with general offices at Tampa, had nearly 311,000 telephones in service at the start of 1957. Serving 100 communities through 12 toll centers and 46 dial central offices, the company expects to double its toll capacity during the next five years.

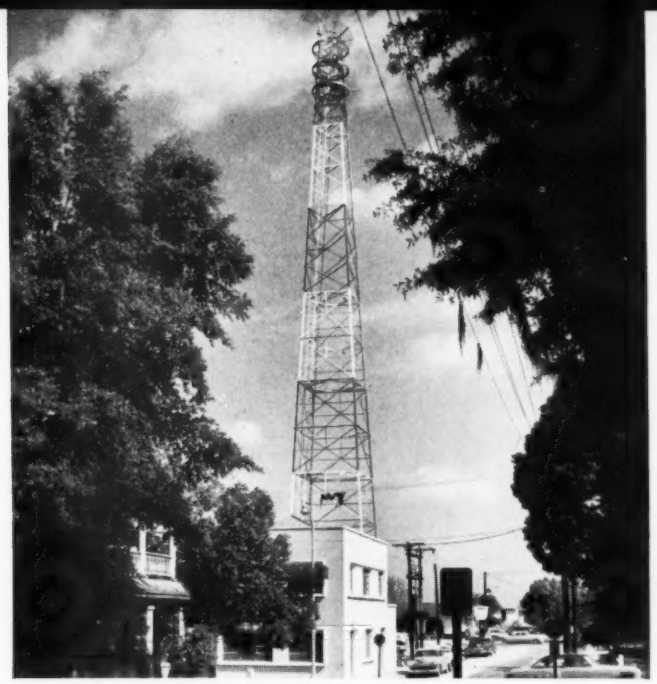
Inter-County Telephone & Telegraph Co., with general offices at Fort Myers and about 34,000 telephones from 20 exchanges in service, serves fast-developing twelve counties in southwest and south central Florida. Twenty-six exchanges with over 60,000 telephones in service by 1962 are forecast.

Florida Telephone Corp. operates 18 exchanges and five sub-exchanges in eight west coast and central counties. Florida Tel had 34,000 telephones in service at the start of 1957, and estimates it will have 55,000 by 1960.

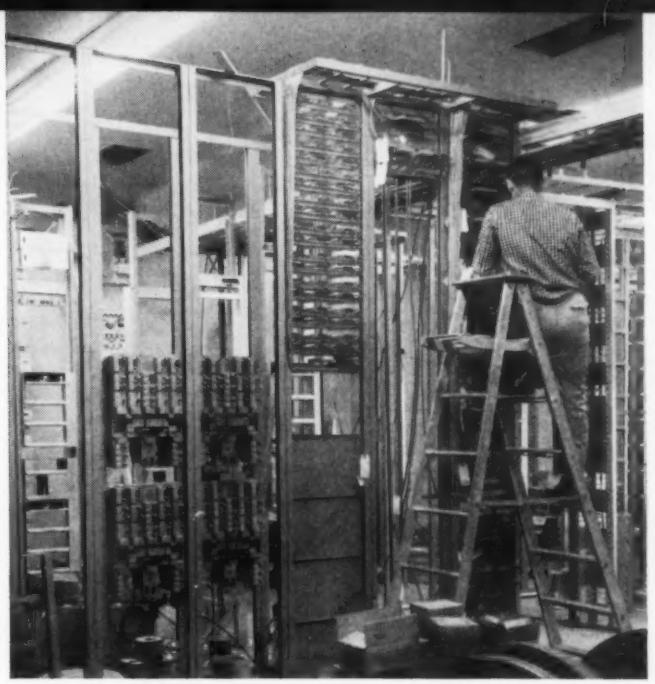
North Florida Telephone Co., organized in 1954, is making rapid progress in north central Florida. There were 4,767 telephones in service at the end of 1956. By 1958 the number should be 9,000.

Spanish Moss is an operating problem in many Southern states. It blows off trees, catches on the wire, slides down-wind to the crossarm, can establish leakage path to ground.





This 175-foot Florida Telephone Co. tower supports antenna for the Ocala-Leesburg microwave link.



Lenkurt and Automatic Electric installed most of the microwave equipment for North Florida Telephone Co.

Future expansion no problem

Peninsular's general traffic superintendent, George W. Rose, referring to the probability that capacity will double in the next five years, says, "I feel that it will be economically feasible to use microwave for all this growth. I doubt if we will use any more cable, except for short hauls." Inter-County's Fort Myers path can be built up to five times present capacity with radio equipment already in.

Fewer outages with microwave

Installed in the summer of '56, the new microwave system quickly proved its reliability. Last October, flood waters knocked out Florida Tel's entrance cable at Winter Garden and Kissimmee. But the microwave link was unaffected and continued to carry traffic; further proof that with microwave there are fewer outages under adverse weather conditions.

Can we help you?

In addition to furnishing all microwave equipment for this network, Lenkurt and Automatic Electric helped engineer the system and installed much of the equipment. A detailed description of this system is available on request. Or, if you face expansion problems and desire additional information, write or phone: Automatic Electric Sales Corporation, Northlake, Illinois. Fillmore 5-7111. *Offices in principal cities.* In Canada: Automatic Electric Sales (Canada) Ltd., Toronto.

Lenkurt equipment is distributed exclusively by Automatic Electric.

AUTOMATIC ELECTRIC

A member of the General Telephone System – One of America's great communications systems

GENERAL TELEPHONE SYSTEM

Robert Tidwell of Lenkurt (left), and Automatic Electric representatives Terry Swett and Grogan Shelor discuss details of installation at Inter-County's Arcadia office.

Peninsular's microwave maintenance superintendent, Arthur H. Stoutenberg, checks new equipment in the company's general office building at Tampa.

XUM

she understands that selling is just as much a part of her job as collecting bills, posting cash or issuing service orders. The fact is that sales is one of the key jobs in business office operations and one of the most satisfying. Here is a chance to be of real assistance to a customer—a chance to offer him the best in residence telephone service. As you can see, one of the essential elements of sales training is the shaping of attitudes of the people who are going to do the sales job—not only the attitudes of the representatives, themselves, but those of the instructors and supervisory people as well.

Then, too, I'm not too sure that all of us who specialize in sales in the telephone industry, much less a service representative, easily understand and appreciate the meaning and value of complete, modern telephone arrangements in the home. However, even after an appreciation in the mind of this young lady is established, there's the job of helping her acquire the sales knowledge and skill needed to develop simple, effective sales techniques.

Here, on the service representative job, perhaps more than anywhere else, sales training should be directed toward helping our people to recognize opportunities and to sell with facility and brevity.

To do this, we've taken a pretty close look at "opportunities to sell" in the business office, and we are concentrating particularly on order contacts—i.e., new installations and orders involving change of address.

The big advantages of these order contacts are:

Selling the customer "while he's in your store to buy," and

Selling on occasions where plant visits are required.

Although the public has changed many of its living habits in the past 30 years, people are, in many cases, still thinking in terms of less than modern telephone service. Real progress is being made toward enabling service representatives to realize why people resist change and to understand the factors which stimulate change. Progress also has been made in helping service representatives recognize the importance of their role in bringing about changes in telephone services; I think the industry is getting "telephone America" to "live modern."

Today our business office people are emphasizing the need for telephones in each of the three major areas of the home—the working, sleeping and living areas. This is pretty true whether we're dealing with a one or two-story house, or just an apartment. Yes, the concept

Left to right, G. A. Schumacher of Indianapolis, Ind.; Mrs. R. V. Miller of Sunman, Ind., and Mr. Miller.

holds even in a two-room apartment. Telephones should be where you are. We're pretty happy with the way this concept is talking hold today and much of this is due to the service representative's helping customers plan for their telephone needs.

The Bell companies are currently using a training program which emphasizes:

First, the importance of favorable sales attitudes among *all* business office people, and

Second, the development of skills in the four steps to the sale—fact-finding, presentation, answering objections, and closing the sale.

Notice, since we are talking about incoming calls, we have no "preparation" step, and no "approach," as it is normally understood in sales procedures. We do have "fact-finding" and the balance of the normal sales contact, "presentation," and "close" and, of course, we always have the problem of "answering objections"—otherwise there wouldn't be any real sales effort involved.

The key to the success of this training program is in the fact-finding and presentation stages. Fact-finding on these incoming calls involving service orders is pretty well limited to obtaining the minimum but necessary information for making a package presentation. We have found that all the information a service representative really needs is the number of floors involved, the number of rooms, the customer's occupation and who uses the telephone. This, plus anything extra learned during the conversation and a few basic assumptions, is enough to make a sound recommendation.

This method is proving most successful as the results of business office selling clearly demonstrate.

Now, let us talk about a phase of selling that is all too frequently overlooked — plant sales — and yet these plant installation and repair forces are in one of the best positions of all to gain customer confidence. Their position is an enviable one—due to the fact that they aren't really salesmen as such. To the customer they are experienced technicians who are eager to see that the customer gets only what he needs.

Add to this the fact that, due to the very nature of their work, they often spend many hours or even days working on the customer's premises. They wisely take time to chat with residence customers to see that the home is completely equipped for adequate telephone service. In the case of a business customer, they are frequently working in close cooperation with key customer personnel. There's no doubt about it—residence or business, the stage is set for excellent additional fact-finding. They are in a beautiful spot to catch last-minute changes in the customer's communications planning—to advise him properly on certain aspects of equipment to take care of his needs, or see to it that the salesman is brought back into the contact as needed.

Plant people recognized the need for their personnel to be taught the proper way and degree to fact-find—after all they only fact-find to the extent they see or hear of a need for service.

They're giving their people who talk to the public more and more help in how to make a recommendation, and how to answer some of the more common objections. Yes, and they're helping them to increase their skill in closing sales too.

In other words, as plant progressed further into sales they too found a need for an organized plan for their sales contacts—and they've worked out their own interview procedure.

They're emphasizing the importance of practice cases. They are putting

particular emphasis on close follow-up —supervision is trying to spend more time with the men on coaching contacts on the customer's premises in an effort to see if their people are in fact doing what they're learning in the classroom. If they aren't, they learn about it early and help them to improve.

These men welcome any sound recommendations that will increase sales. They feel selling is an integral part of their job. And, this is certainly apparent in the fine job they're doing.

Selling means more to the installers and repairmen if you call it what it is —giving the customer the kind of service he really should have. Sales has taken its place along with safety, quality and production in importance in plant people's thinking today.

But, what about the telephone companies' sales activities in the business markets? These efforts result in tremendous sums of additional revenues every year throughout the telephone industry in the United States.

Now, I know that there are many different ways of handling these sales among the companies represented here this morning—whether by full-time salesmen, or local managers or wire chiefs who, as a part of their jobs, devote considerable time to the needs of both their business and residence customers. Throughout the Bell System we normally use salesmen who, for all practical purposes, are responsible for meeting the communication requirements of our business customers. They sell everything from simple key telephone plans for a small business, all the way up to the very complex communications that serve the needs of the very largest businesses. They sell switchboard and related services, long distance programs, such as the "Flowers by Telephone" promotion in which many of you participated with us, architects and builders' services—you name it. If it fulfills a communication need, these people probably have it on their shelves.

It is during the initial sales training period that the company gets a chance to lay a solid foundation. Here the salesman is given the basic knowledge to help him find and start developing those skills required to make a real salesman.

The foundation of the training course is equipment—*what* it is, *how* it works, *where* it can best be used, *who* usually has a need for it, and lastly, *why* this piece of equipment is better for this particular customer than any other piece of equipment.

Activated equipment has proven very helpful in teaching the equipment side of the job—in fact, and I know very well you folks will agree, there is nothing as helpful as the piece of equipment itself. Let the trainees touch it, pick it up, see what makes it tick. Above all, let him see it in operation.

Left to right, W. J. Darling Jr. of Swampscott, Mass.; D. A. Barnes and W. T. Autry, both of Grinnell, Ia.

But, let's remember one thing: The best knowledge of equipment only furnishes half the background—the other half is sales techniques. Yes, communication sales people must be well grounded in the steps of a sale—the Preparation, Approach, Fact-Finding, Presentation and Close.

These are the vehicles that take the equipment from the company's shelves and put it within the customer's reach —and they present the greatest challenge to the instructor and his class.

You can't touch an approach or see fact-finding—no one can hand a salesman a suggested planned sales contact and say: "Here, do all these things in this sequence and you'll have a top flight sales interview." No, it can't be done.

Now, we're talking about intangibles. Sure, some things can be written down or a helpful visual aid can be handed out, but for the most part we're talking "ideas." We're trying to create a "way of operating"—to develop an ability to create desires, to teach a man to sense the time for closing the sale, when to broach a subject, or when to take his leave and try the job at a more opportune time.

I suppose the office *preparation* lends itself to specifics more than any other phase of the sales contact. The salesman should be taught this step in considerable detail. He should know what account information is on file and any other information that can be made available concerning the customer's type of business, products, organization and its functions and general physical layout.

When the instructor starts teaching the *approach*, it's then that we start to work with very few specifics.

I'll say this about our approach problem: Representatives from any telephone company normally get an excellent reception from their customers and subscribers. However, that's just one part of the approach—the biggest part is that the approach must be made to a person who has authority to buy, and made in such a way as to get his full attention and interest.

Approaches, as such, do and should vary, and yet when it comes right down to it, it's probably a good idea to teach salesmen several reserve approaches that have been well tried and are known to be succesful. The approach is the door opener—only a successful approach can get a salesman in and permit him to take the next and major step: *Fact-Finding*. Conclusions drawn with only *half* the facts is slamming the door on complete communications service.

In spite of what many salesmen think—and this applies to a lot of other industries beside our own—fact-finding is *not* simply finding out what the customer *wants* to buy—he'll tell you that!

Fact-finding is finding out what the customer *needs*—and it's doing it *before* the salesman makes a recommendation.

For a salesman to do this, he must learn how the customer's company is organized—what departments are involved. How the various departments operate. What relationship they have with each other. How they are using their existing telephone service. A salesman has to learn whether or not all of the customer's operations are located "right here." Are there any branches? Do they get materials from outside suppliers? Who are their distributors, and so on.

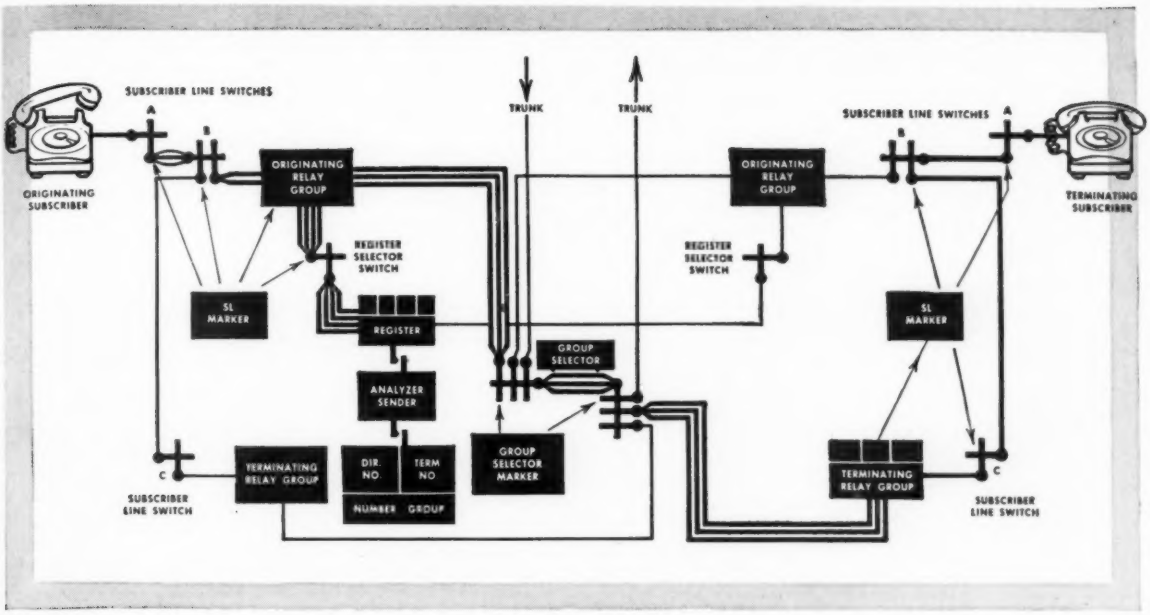
In short, for a salesman to make an intelligent sales presentation he must know *how* the customer's business is organized and he must *understand* each facet of its day-to-day operations.

Strong sales presentations based on adequate, concrete facts end up in *sales* —sales that do a complete communica-

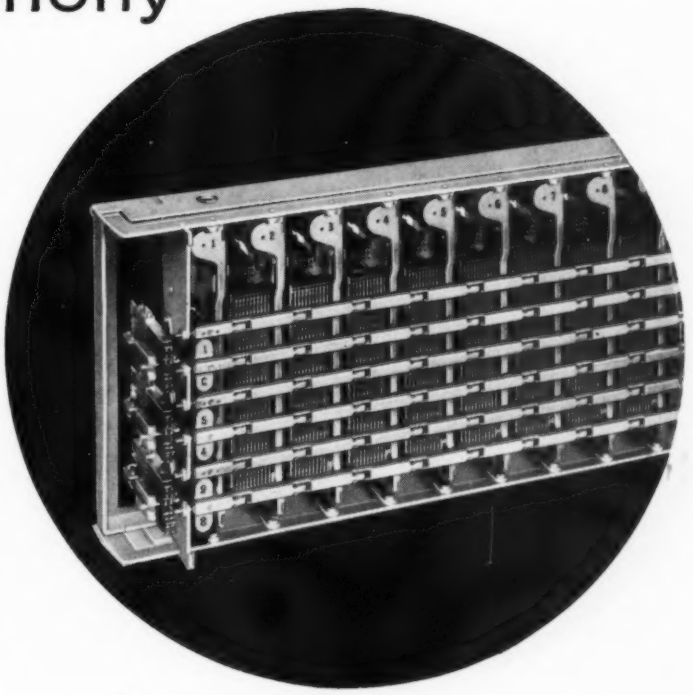
(Please turn to page 80)

XUM

North's expanded production facilities devoted to By-Path Crossbar Switch production are among the most modern in the industry.



NORTH by-path crossbar switching opens the door to modern telephony



North is now producing, installing, and cutting over By-Path Crossbar exchanges all over the United States. North By-Path Crossbar is the answer to tomorrow's requirements TODAY.

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North By-Path Crossbar will provide speedy, efficient handling of peak traffic loads with an absolute minimum of incompleted calls.

North By-Path Crossbar requires less floor space and is readily expandable.

Tested and approved, in use today, NORTH BY-PATH CROSSBAR is universally acknowledged as the most advanced practical telephony switching system.

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tions job for the customer. Telephone equipment sold this way stays in. The customer is satisfied because his needs are satisfied. These installations don't require frequent changes which result in increased costs for the accounting, traffic, engineering, plant and commercial departments, and they avoid the inevitable customer dissatisfaction that comes from piece-meal sales efforts.

Speaking of sales recommendations, most businesses are constantly working with their people to avoid making any piece-meal *sales presentations*. Sure, there are times when a salesman *has* to answer a question and maybe make a partial recommendation before he has the complete communication problem in mind. But, he should do it on a tentative basis—let the customer know that he can't *really* answer that question until he knows his over-all needs.

During the training period, we should emphasize getting our men to think big—learn the over-all requirements—"don't miss a trick" and *then* follow-up with a solid, across the board recommendation that will do the kind of a communication job that should be done.

And, of course, the pay-off of a sales contact is the *close*. There are many ways of making a close, but they all add up to *asking the customer to buy*.

Each step of the contact from the preparation through the close must be thoroughly treated in the initial training course. But, let's not let the training stop there.

After the new salesman is out in the field, he should learn the importance of accessible and capable supervision that should always be at hand to help him do an effective sales job.

His supervisor should spend considerable time in coaching him after visits together to customers' premises. Only in this way can the supervisor see how the training is actually taking hold. Then, he is in a good position to give help, offer constructive criticism and give the salesman the necessary follow-up training on his selling techniques or equipment problems at the time they are needed.

It seems to be quite helpful for an over-all training program, if the *instructors* also get out occasionally with these newly-trained salesmen—then they can see for themselves how their training is getting across, they can counsel with supervision and, if desirable, revise training programs to keep them at maximum efficiency.

But, to get these vital concepts across, a great deal depends on the instructor himself. So let's talk briefly about instructors, sizes of classes and a few other matters pertaining to teaching.

Sales instructors must not only know their subject, but they must have the over-all ability to teach, and still keep the class awake and interested.

It goes without saying that whenever possible the instructor should have field experience in the particular phase of sales he is teaching. During this period of cutting over from the era of simply meeting customer demand to active selling, it is sometimes difficult to get a man who has both sales experience and teaching ability. In any case, the instructor who is assigned to train the group must be thoroughly familiar with the training materials available.

Usually, small classes of about six people seem most effective. Selling always has called for, and probably always will call for, a considerable volume of classroom practice work—role playing—where Jim is the customer and Joe is the salesman. Each student should get as many chances to participate in this kind of activity as the course will permit.

In presenting material take advantage of a student's existing knowledge, new ideas should be associated with known ideas as much as possible. This simplifies the material and facilitates fast understanding. Visual aids of all descriptions (activated communications equipment, movies, slides, tape recordings, charts, posters, etc.) are used as much as possible in order to direct training effort toward as many of the five senses as possible.

Probably one of the most valuable techniques is where the instructor takes a minimum part in the control of a class. He just listens and permits the students to talk themselves into the right answer—they work it out. It's the group answer and it's, therefore, usually the right answer. If they wander in the wrong direction, the leader merely throws out some additional thoughts that by their very consideration usually lead the group back on target.

This is a very effective teaching device and, of course, is one that is being used more and more in many facets of teaching today.

In closing, let me say this: There is no panacea in any sales training program—at least we haven't found one. Any program, no matter how well-conceived, requires a lot of thought and effort in preparing it, organizing it and setting it in motion. To be truly effective, such a program must be worked with, revised and refined as conditions change, and as only your own experience can dictate.

And, lastly, much of the effectiveness of a sales training program—regardless of how successful the training itself may be—can be lost without the day-to-day follow-up and on-the-job coaching by competent, well-trained interested supervisors, so necessary to make the sales training job complete.

And, so it is! Business office sales, plant sales, special sales force or directory—it's all sales and it all adds up to top flight customer service and a lively, healthy, growing telephone industry.

All Employes Should Be Trained In Telephone Service Merchandising

By J. P. BORDEN

MAY I preface the remarks which I shall make by reading part of an advertisement that recently appeared in newspapers and magazines:

"All of us can't be geniuses. But any ordinarily talented mortal can be a success—and that's more than some geniuses are.

"Now, as in Æsop's time, the race doesn't always go to the one who potentially is the swiftest.

"The trained man has no trouble in passing the genius who hasn't improved his talents.

"In good times and bad times, in every technical and business field, the trained man is worth a dozen untrained ones, no matter how gifted."

If, with *training* any ordinarily talented mortal can be a success—if the *trained* man has no trouble in passing the genius who hasn't improved his talents—if the trained man is worth a dozen untrained ones, not matter how gifted, is there any question in your minds as to the advisability, in fact the absolute necessity for providing *training* in telephone merchandising, not only for commercial and sales personnel but for all telephone employes?

The Central Telephone System, with which I am associated, feel that our main problem is to show present and potential subscribers how to utilize *tele-*

(Please turn to page 84)

TELEPHONE CABLES

For Every Application

TYPE 150

AERIAL AND DUCT

A premium construction offering semi-color coded, polyethylene insulated pairs. An .002" copper tape shield and a hard surface vinyl jacket. These cables are made in sizes #24, #22 and #19. Range 6 to 404 pairs.

TYPE 122

INSIDE TELEPHONE

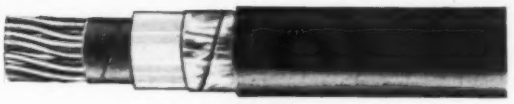
PWC Inside Telephone Cables are vinyl insulated and jacketed. They feature fully color coded pairs and a Nylon Rip cord for easy stripping. Made in sizes #24, #22 & #19, range 2 to 101 Pairs. Brown or Ivory.

TYPE 190

AERIAL AND DUCT

Type 190 offers the excellent characteristics of polyethylene in the insulation and the jacket. The conductor assembly is aluminum shielded. Manufactured in sizes #24, #22 and #19 AWG. Range 6 to 404 pairs.

TYPE 166



BURIED

An excellent design for direct burial. Polyethylene insulated, semi-color coded pairs. Pair assembly covered with extruded polyethylene belt, copper shield and vinyl jacket. Range 6 to 404 pairs.

TYPES 130 & 132 160 & 162

SELF-SUPPORTING CABLE

These cables designed for aerial span installations without messenger wire support. Types 130 & 160 copper weld conductors — long spans, Types 132 & 162 hard drawn copper conductors — shorter spans. Types 130 & 132 Polyethylene sheathed, Types 160 & 162 Polyvinyl sheathed.

TYPE 177

RURAL DISTRIBUTION

PWC Rural Distribution Wire is made in constructions from 1 to 16 pairs. Each conductor is insulated with polyethylene and jacketed with colored vinyl. Pairs are assembled around a 109-E steel messenger wire.

TYPE 164

BURIED TELEPHONE WIRE

An armored Telephone Wire designed for direct burial by cable plow. Two conductors #17 solid of relief-annealed copper are parallel insulated with polyethylene. A .005" bronze armor tape is run longitudinally under a polyvinyl oil and acid resistant jacket.
Also available in unarmored style TYPE 163.

NO. 214 - RURALINE - NO. 212

INSULATED LINE WIRE

The new polyethylene insulated line wire designed for low cost rural service extensions. Two Copperweld conductors are insulated in parallel. Size #14 is identified as No.-214, size #12 as No.-212.

OTHER PWC TELEPHONE PRODUCTS

There are many additional products manufactured by PWC for the Telephone Industry. In addition to the complete line of thermoplastic inside telephone wires, Urban and Long-Span distribution wires, many custom cables are manufactured to customer specifications. For additional information or for special cable engineering contact your nearest PWC distributor or write direct to the Plastic Wire & Cable Corporation.

PLASTIC WIRE & CABLE CORPORATION
JEWETT CITY, CONN.

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DID YOU KNOW THAT...

Kellogg was the first to introduce a transistorized voice frequency telegraph carrier, sixteen channel.

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Kansas City 1, Missouri
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phone service fully to their profit and advantage. Telephone merchandising with merchandising training is the answer to that problem.

A recent directive on telephone merchandising and training, from the general manager of the Central Telephone System (who incidentally is the moderator for this panel) stated:

"A very important part of the merchandising program which we will be conducting is the training of personnel to be thinking, talking and making sales during the course of their respective jobs.

"It seems that we all have little or no time to spend on this merchandising activity, particularly in view of the supposed lack of the need for sales work during the past several years. As a matter of fact, during the entire tenure of employment of a great many of our employes.

"There is a real opportunity for increasing the revenue of the company by sale of relatively low investment additional services to our subscribers. Each employe, by showing a real interest in his job and company, if given the proper tool (including training), is in an excellent position to make these sales.

"All companies are directed to start this training, and are directed to conduct a merchandising program and continue the training to the point that we will again have a sales force (comparable to that of the 30's) consisting of all employes working enthusiastically on revenue producing sales work even as they proceed with their regular jobs. This should be our first aim in our merchandising program."

In developing the merchandising training program, under that directive, our plan was to provide a merchandising training course, in our training school at Charlottesville, Va., for top level commercial managers from the various operating divisions. These men, after completion of the course, returned to their respective divisions, states or districts where they conducted a similar course for the key people of their organization who in turn act as on-the-job instructors, or as cadre in the merchandising training of all employes of their unit, with first attention being given to service representatives, commercial sales people and installers.

Following are some of the basic points of the training program we are attempting to implement throughout our system organization:

(1) The first and most important phase, and above all the most difficult, is to persuade employes to accept and understand that merchandising is not only a part but an important responsibility of their job.

(2) We attempt to overcome the natural conviction on the part of employes that they are not salesmen. It is not uncommon for an employe to say—"I am no salesman—I couldn't sell anything."

J. P. BORDEN

Our job is to show employes that it is not a sales job. It is telephone merchandising. It is knowing the telephone business—of being able to analyze a subscriber's needs and recommending to him the kind and amount of telephone service needed to meet his requirements.

(3) We try to make the merchandising job interesting and understandable by offering some basic and some new merchandising philosophy for discussion by suggesting techniques which may be employed in contacts with subscribers and prospects.

(4) The program includes instruction for an understanding of—

(a) Just what is telephone merchandising.
(b) Why we are in the merchandising field.
(c) The benefits of merchandising.

(5) We try to show employes—

(a) Why people buy.
(b) That the telephone business is not only a regulated business but is subject to sharp competition.
(c) That our real competition is the free-for-all competition for our share of the subscriber's dollar.

(6) In the initial training program we cover 20 basic items of service which may, in most cases, be sold. They are—

(a) Main line service.
(b) Additional lines—both in office and home—teenagers.
(c) Additional telephones (extensions).
(d) Colored telephones.
(e) Two-tone telephones.
(f) Higher grades of service (where facilities available).
(g) Long cords (where appropriate only).
(h) Koiled cords.
(i) Directory listings.
(j) Additional bells—chimes.
(k) Loud ringing gongs—outdoor bells.
(l) Bell cut-offs.
(m) Hard of hearing—amplifying sets.
(n) Speaker telephones.
(o) Jack and plug equipment.
(p) Electronic secretary.
(q) Saving disconnects.
(r) Saving downgrades.
(s) Long distance—credit cards.
(t) Directory advertising—lay seed and refer to directory representative.

(7) In training we discuss contacts which offer sales opportunity.

(8) In presenting sales techniques in order to simplify matters we divide contacts into four parts:

(a) *Recognition.* Recognition of the fact that the customer's service is inadequate. It is essential that all sales opportunities be recognized by sales leads, such as incoming and outgoing calls.

These records should be reviewed early because such review uncovers possible sales opportunities which might be missed in conversation. The next step is getting the customers' attention and interest.

(b) *Fact Finding.* This step is of primary importance since we cannot counsel or sell without the facts. Certain facts will give us information regarding the customer's usage and his needs. These we must have.

It is important that this step be handled on a discussion basis. Often development of one fact leads to an opening of another. In training for this item we divide the group into pairs and let them practice having one act as a service representative and the other as a customer. We teach them the technique of asking questions.

(c) *Presentation.* In this step we make our recommendation, create a desire for the service, quote the rate and overcome objections. If the objection is merely an excuse we should tactfully recall attention to the benefits of the service.

(d) *Close.* The closing may be at any time during the contact when the employe believes he has secured the customer's consent as to the advantages of the service. We teach our people to accept a decision graciously and close the interview so that if necessary we may have the opportunity to open the discussion later.

The development of these four parts requires basic instructions in selling technique.

(9) In order that our employes may have some kind of package or a basic approach we present four plans:

(a) *The Universal Plan* (four or five telephones). This is unusual, but there are times and places where this will apply.

(b) *The American Home Plan* (three telephones). This is very desirable for convenience; one instrument on each floor.

(c) *The Homemaker Plan* (two telephones). This plan provides for one instrument in the main part of the house and one in the kitchen.

(d) *The Basic Plan* (one telephone). One instrument in the home.

(Please turn to page 125)

dead-ends tailored
for jacketed conductors
Preformed Dead-Ends grip firmly, yet jacketing material won't creep
There is only one way to efficiently dead-end self-supporting cable, C-rural wire and B-rural messenger: Apply Preformed Dead-Ends over the jacket.
Preformed Dead-Ends are precisely designed and fabricated to hold firmly, but low unit pressure prevents undue creepage or cold flow. In addition, for many applications they have a neoprene coating that cushions the grip yet relieves and distributes stresses.
Preformed Dead-Ends will hold the maximum service loads of the conductor or messenger without damaging the jacket. When the jacket is weatherproofing, as on B-rural messenger, you get full protection by not exposing the conductor to the elements at any point.
For more information about dead-ending weatherproofed and insulated conductor and messenger, write PREFORMED LINE PRODUCTS COMPANY, 5349 St. Clair Avenue, Cleveland 3, Ohio. Cable Address: Preformed-Cleveland . . . in 10 years the leading manufacturer of armor rods, dead-ends, Guy-Grip dead-ends, and other line accessories.
PLP
You can look up to Preformed
Made in accordance with or for use under U. S. Patent No. 2,761,273. Other patents issued and pending.

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New Trends in Judicial and Regulatory Decisions

*By LAMAR S. STOOPS**

(A Commercial Conference Address)

THE SUBJECT, "New Trends in Judicial and Regulatory Decisions," as you can well see, is a rather broad one. Mr. Lawson, however, has simplified matters for me somewhat in that he suggested, and I quote, "I would like to have you stress particularly the rash of directory covers that are being sold today. In my opinion, this constitutes a serious violation of fair competition and most certainly the use of advertising on directory covers limits the value of the bona fide advertisers in the book itself."

Thank goodness that narrows the field considerably, and I will attempt to deal primarily with foreign attachments in relation to the assigned subject.

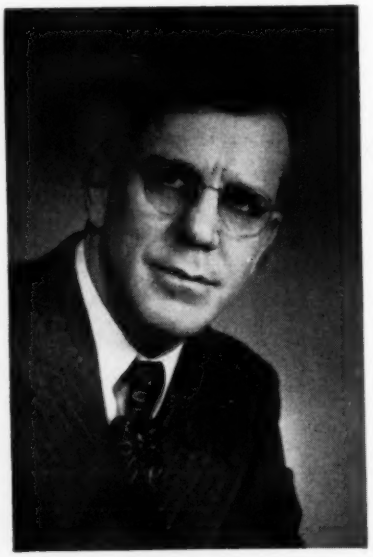
At first I thought I would do a great deal of research on the subject and simply recite a condensed version of my findings. Then, it occurred to me that most of us here have undoubtedly read practically every article in our trade journals and association bulletins covering the subject. Furthermore, as I developed thoughts for this paper, it occurred to me that, not only would a digest of recent court decisions be repetitious and perhaps boring, but that too much research might discourage me in developing a thought, perhaps foreign to the assigned subject, which has challenged my imagination and I hope worthy of discussion. You know we all have imagination, but the trouble is we are so busy keeping up, that we often fail to look up.

Now 20 minutes isn't very long to cover any subject, so let's look quickly and briefly at two or three recent court and commission decisions concerning foreign attachments. There was a recent decision of the New York Public Service Commission which we all like. Two paragraphs from that decision are, and I quote:

"No binder, holder or auxiliary cover, except as may be furnished by the telephone company, shall be used on or in connection with any telephone directory furnished by the Company. . . . Equipment furnished by the telephone company shall remain its property and be returned to it whenever requested in as good condition as reasonable wear permitted."

"The cost of repairs or repair made necessary by violation of any of the foregoing regulations shall be charged to the subscriber."

Now, that makes sense, doesn't it? The only trouble is that all courts and commissions do not agree with the New York Public Service Commission's ruling.



L. S. STOOPS

Now, let us look at a ruling made by the Massachusetts Supreme Court concerning the same matter. In this case, the New England Telephone & Telegraph Co. brought suit against the National Merchandising Corp. of Wellesley, Mass., which since June, 1955 has distributed light weight plastic covers among many Bay State telephone subscribers. In plain lay language, the telephone company *lost*, and it took the court 20 pages to say to the telephone company, "sorry boys."

The meat of the decision handed down by the Massachusetts court can be summed up in one paragraph, the trial judge concluded that the directories are the property of the subscriber to all practical intents and purposes. It stated that, "if it results in a dilution of the classified advertising appearing in the yellow pages issued by the telephone company, it does not constitute unfair competition." "It is unimportant," said the court, "that the company retains title to the directories, *if in fact it does.*"

Now, that is a discouraging and revolting development, if I may be privileged to say so (which I did).

The tragedy of such a conclusion on the part of the court in this instance is this: The court apparently fails to give due consideration to the obvious fact (to us) that advertising revenues lost to our industry, from whatever cause, must of necessity ultimately be replaced in some other area, probably with increased exchange rental rates chargeable right back to the consumer, whose interest the court professes to be protecting. Now, let's see if we cannot find something a bit more cheerful.

The sun seems to be shining a bit more brightly in Illinois. A complaint by the Illinois Bell Telephone Co.

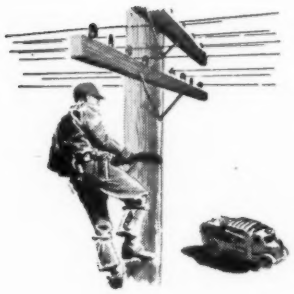
*Mr. Stoops is Vice President of the Nappanee (Ind.) Telephone Co. and a member of the USITA Commercial Committee.

The world of science behind EXIDE-MANCHEX BATTERIES

Being interviewed is J. P. Malloy, Chief Control Engineer. Shown at lower left is a positive plate from an Exide-Manchex Battery.

"High purity lead prolongs battery dependability"

At the Exide Laboratories—**Reporter:** Just exactly how pure is the lead in Exide-Manchex positive plate buttons, Mr. Malloy?



Malloy: There is less than one-hundredth of 1% active impurity.

Reporter: How do you insure and maintain such a high degree of purity?

Malloy: We test every new batch of lead here in our laboratory before we approve it for use.

Reporter: How does this high purity lead extend battery dependability?

Malloy: It converts to active material at the proper rate. Over years of use, these Exide-Manchex Batteries retain their capacity to provide full power when needed.

Reporter: Obviously, this is an important feature of Exide-Manchex Batteries.

Malloy: Yes it is. But it's only one of the many engineering details that contribute to their long life and high performance.

Note to battery users: Whenever you order batteries for float or cycle service in stationary applications, be sure to specify Exide-Manchex. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Phila. 2, Pa.

THE ELECTRIC STORAGE BATTERY COMPANY **Exide®**

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against the manufacture and distribution to telephone subscribers of plastic covers to be placed on telephone directories was sustained by an Illinois appellate court. The court, reversing a lower court decision, ruled that the company's complaint stated a cause of action for injunction. The action was against Woodstock Plastics Co., which sold advertising space on plastic covers.

When this company distributed covers, it included instructions urging the subscribers to affix them to their directories, all without the telephone company's consent, approval, or permission. To me, that is a victory for telephone companies operating in Illinois, at least a victory on the legal front.

An interesting point, to me, in the Illinois case is that the Plastics company included instructions urging the subscribers to affix the plastic covers to their directories. It would be interesting to speculate as to what might have happened in the Illinois case had the Plastics company advised the recipient of their covers as follows:

"Dear Madam: Enclosed herewith you will find a beautifully designed plastic book cover. You will, we are sure, appreciate the quick reference list of useful information contained on this cover and at the same time agree with us that it will serve as a protective covering on whatever book you wish to attach it. You may wish to put it on your Sears and Roebuck catalogue, your cookbook, your dictionary, or your favorite magazine. We wish to advise you, however, that it is illegal to place the handsome and useful cover on your telephone directory even though it might fit perfectly."

Now, friends, can you visualize the reaction of the housewife upon receiving a plastic cover with that explanation? Being a law abiding citizen, the good housewife would naturally hesitate—at least several seconds—before finding out if the cover would fit the telephone directory. Now, I have no idea what the legal aspects of such an approach would be, but having seen human nature operate I have a pretty good idea what madam housewife would do. What do you think?

Left to right: J. H. Agee of Menlo Park, Cal.; A. O. Sander of Shawano, Wis.; Manuel I. Merlin of Havana, Cuba; Frank Dearden of Washington, D. C., and A. W. Ryke of Chicago, Ill.

For the moment, let us touch on another facet of the foreign attachments horizon. We are all aware that we have lost the legal battle against the Hush-A-Phone. Not being familiar with the Hush-A-Phone, I attempted to secure one from regular office supply stores in our area and could find none that would fit late model telephones. Upon investigation, however, it has been disclosed that the Hush-A-Phone Corp. has developed a new unit that *will* fit all new telephones, and will soon have it on the market.

Upon checking with other companies in Indiana, it appears the Hush-A-Phone is no immediate threat in itself, especially since the industry can offer close speaking phones of its own that are satisfactorily effective and reasonable in cost. The "fly in the ointment," in the Hush-A-Phone deal, is that the door may have been left open for legal entrance of other foreign attachments that may have serious consequences lest we stay ahead of the foreign invasion on the merchandising front.

Now, with that very brief review of, "Recent Trends in Judicial And Regulatory Decisions," will you not agree with me that a reasonable conclusion as to the direction of the "trends" is, to say the least, confusing! And, would you not also agree with me, that in all probability, as time goes on, our position will continue to be even more confusing on the legal front? It would seem to me that the handwriting on the wall is rather clearly defined, spelling out a call for *revised* and *positive* thinking.

If I am correct in assuming that we are indeed losing out on the legal front, then let us try to determine the cause. From my admittedly limited research on the subject, it appears to me that the courts are primarily concerned with what they interpret to be the best interest of the public, rather than the legal and technical aspects of the reasonableness of telephone company rules and regulations. We may attribute their behavior to political influence, or whatever you wish, but the fact remains that it is a device of expression on the part of the public, to attain the services it desires. The problem then resolves itself into the simple conclusion that the best defense is a strong offense. In other words, if we cannot lick 'em, let's join 'em.

Now, let's get away from the legal aspects. We know our association officers are sparing no effort to protect our interests on the legal front and that they will continue to do a bang up job on that score. But, let us not depend on the legal staff to carry the ball by themselves. Better, we should subject ourselves to a large shot of vitamin *push* while there is still time, rather than involuntarily subject ourselves to a large shot of formaldehyde administered by the friendly undertaker.

This is a fast-moving world, and services that satisfied our customers 10 years, yes five years, and even one year ago, are not necessarily fulfilling cus-

Left to right, L. A. Cutshall of LaGrange, Ill.; R. G. Sands of Waukegan, Ill.; Foster B. McHenry and John H. McHenry, both of Jefferson City, Mo., and R. F. Fairly of Kansas City, Mo.

"re: *Your shipment on the 5th...*"

Some people still send communications one character at a time.

Others use DATAFAX—the fast Stewart-Warner electronic way to transmit all data over telephone lines.

Datafax transmits and records any material: correspondence, drawings, pictures, printed matter, even handwritten notes. And since copies are exact duplicate images of the original, chance for error is eliminated.

Cost?

Automatic transmission and recording eliminate need for full-time operator; recorders will even respond to transmissions sent after the office is closed for the day. Datafax also eliminates retyping, proofreading, intermediate handling, intransit delays—and their clerical costs. The clear, smudge-proof, permanent Datafax copy costs less than 2¢ for a letter-sized unit.

Chances are your accounting . . . inventory control . . . engineering . . . production . . . branch sales . . . a warehouse operations have outgro Primitive Communications. If so, yo want to find out about Datafax. Fir send for your copy of the free Dataf bulletin. Write: Stewart-Warner El tronics, Dept. 24, 1300 N. Kostn Ave., Chicago 51, Ill.

STEWART SW WARNER ELECTRONIC

a Division of Stewart-Warner Corpor

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tomer demands today. Naturally we pride ourselves on the accomplishments of our great industry over the past years, and rightfully so. But, let us stop and think a moment and ask ourselves how many of the services we now provide have actually been forced upon us, and I might say, with some reluctance on the part of the industry as a whole. This forcing business was introduced into the industry way back when the Bell System was forced to recognize us lowly Independents as legitimate operators. More recently, and we might as well be frank about it, we have been forced by public demand to provide many special services, now commonly accepted, such as: Answering devices, recording devices, colored telephones, close speaking telephones, retractable cord (koiled kords), telephones for the hard-of-hearing, and many others.

Let us get back to these directory covers and ask ourselves why we have them to contend with. Surely there can be but one answer, *the public* finds them useful. Just look around here in Chicago offices and you will find hardback covers binding the directories. All that is necessary is to go to one of the Horder stores and make the purchase. And, I dare say, that in all probability, many of you folks in this meeting have some sort of directory cover on your own books, which common sense dictates as reasonable. So let us be *reasonable*, and admit that directory covers, physically speaking, may well serve a useful purpose in that they actually protect, and prolong the life of our books. Foreign directory covers, with advertising thereon, is a horse of a different color.

These foreigners who "ride free" on our covers are surely trespassers, unethical hitchhikers thumbing a ride in a gold plated Cadillac, and if you please, at our expense! Please note that I refer to the *producers* of the "foreign" covers, and not our local patrons who innocently fall victims to the unethical practices. In the past, most of us sold advertising on our directory covers.

We "cleaned up" our covers back in 1948, primarily because our merchants considered it so valuable that they fought for space. We were happy to eliminate the cover advertising because, like most of you, we came to the conclusion that a telephone directory should look like a telephone directory, and not like a billboard. We still feel that way, but it might be well for us to remember the whole problem.

"Under the free economic system, the consumer remains the ultimate authority as to what will and will not be produced. If the businessman fails to do his duty by the consumer, he eventually has no duty to perform." This is a quotation from one of our trade journals which, in turn, reprinted it from the *Wall Street Journal*. As commercial folks, surely we are "businessmen," and in reality are operating under the free economic system. Wishful thinking cannot exempt us from the economic law of our land.

Left to right, Wyman Wiswell of Elkhorn, Wis.; Berney Simner of St. Louis, Mo.; W. O. Trettin of Los Angeles, Cal.; A. G. Kiesling of Madison, Wis., and F. B. Twigg of Lansing, Mich.

I believe it has been demonstrated that what our consumers wish, they will obtain, by ethical means or otherwise. If we do not supply the services and devices our patrons want, then come "hell or high courts," somebody else will. So, let's do something about it.

If indeed people find plastic covers useful, and I am convinced they do, then why don't we provide them, with or without advertising, as our specific situation may dictate, with or without charge, as again, our local situation may dictate. I cannot help but feel that if we provided attractive plastic covers, without advertising, that we would be able to control the "foreign" cover problem to our own benefit, financially and from the standpoint of public relations. It is doubtful if a "foreign billboard cover" could find a place to roost if our patrons had a choice between it and an attractive cover supplied by us. And here is where I am going to let my imagination take over.

This is no longer the age of the Model "T," this is the age of the Russian Sputnik, a far span of progress. This is no longer the age of black, this is the age of expression by color. People, particularly our good womenfolk, want harmony in their color schemes. Let's face it, many a housewife hides her telephone directory because the cover color does not harmonize with the surroundings.

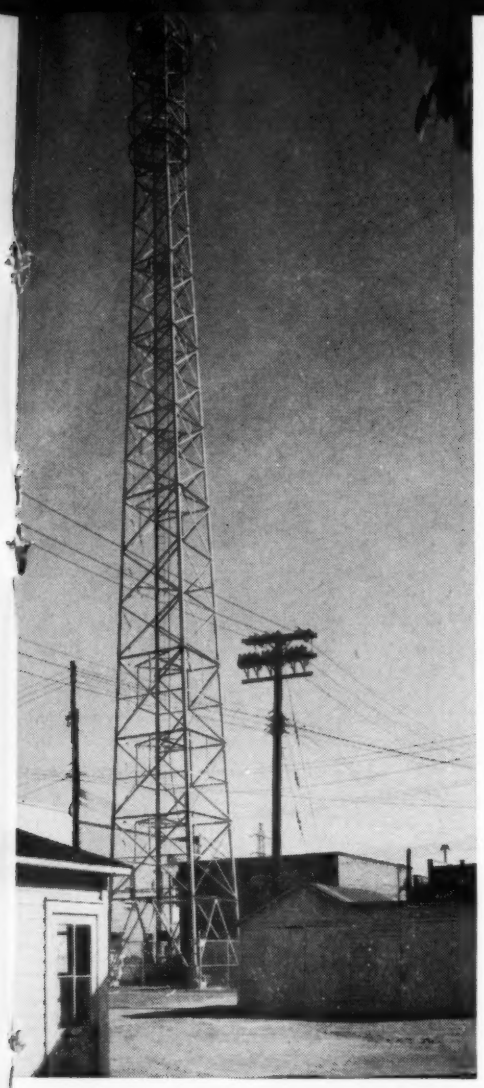
Today, we even find refrigerators, and other household appliances, on the market with panels making it possible for the housewife to decorate them to their own choosing. Does it seem unreasonable then that that same housewife might like to have a choice of telephone directory cover color and design? She may want a chinese red cover in her kitchen, ivory in her bedroom and a beige cover in her living room. She has that choice in practically every other area of her home, so why not make it possible for her to decorate her telephone directory to her own liking? We have given her colored telephones, and colored cords, what's wrong with her choice in directory cover colors? Now I am going to propose what may be a simple, and practical (I hope) solution for your consideration.

I have here a simple clear plastic directory cover. Although I do not have price quotations for the production of such a cover from a firm that is properly equipped to mass produce them, I have every reason to believe that such a clear plastic cover could be produced at a very reasonable cost. Now, let us see what we can do with this clear plastic cover. In the first place, many of our patrons might like to have a clear plastic cover on their directory, simply to preserve the appearance of the directory *as published.*

On the other hand, let's get back to this housewife who would like to have a directory cover of a color, or pattern, that harmonizes with the surroundings. It would be an easy matter to insert a piece of paper of the color of her choosing, or, and here goes the imagination again, a piece of wall paper, if you please. While I've been talking about the housewife, who, it is generally conceded, determines styling of most products, let's not overlook the teenage den, or for that matter, the bachelor apartment. Just insert your favorite pin-up girl inside the cover and still not affect the usefulness of the directory one bit. Now, is this all nonsense? It may sound like it today, but yesterday's frills are often today's accepted necessities.

Who will pick up the check if plastic

(Please turn to page 132)



AT LORAIN, OHIO . . . a 150 foot tower built to allow future service to tributary offices of Amherst, Birmingham and Vermilion. In spite of the difficulty of erecting a tower in a densely populated area, the job was completed on schedule with no special problems.

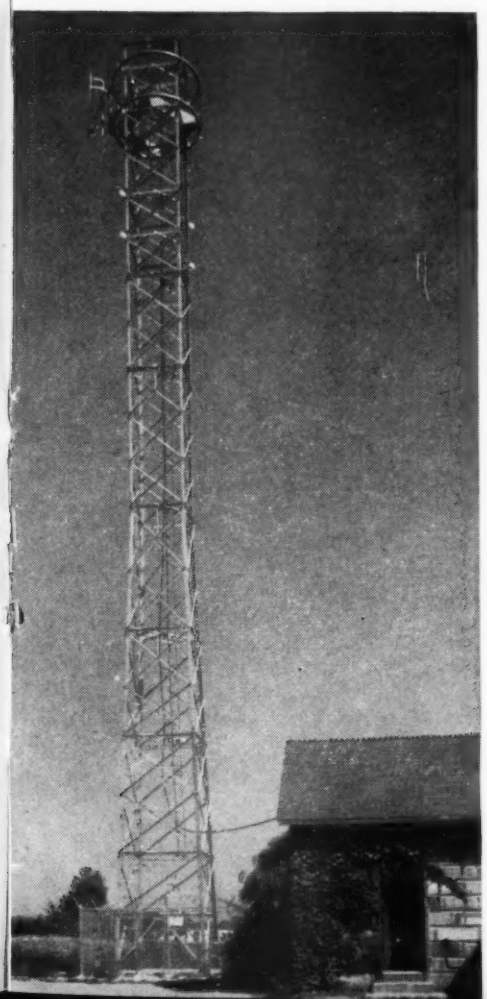
Lorain Telephone Company uses Blaw-Knox Microwave Towers to expand service... open alternate route

Because the present cable route is vulnerable to traffic damage, the Lorain Telephone Company has just completed a supplemental microwave route to assure trouble free service and expand current facilities. Operating between Lorain and Avon Lake, the new microwave system now serves 4,800 of the company's 36,900 customers.

In providing continuous service to an ever growing number of customers, this progressive company relies on Blaw-Knox for tower dependability and tower adaptability. Erected by the Radio Construction Company, these durable microwave towers are built to withstand severe weather conditions.

A microwave system may be the cost cutting answer to your own expansion plans and a practical approach to even better customer relations. Blaw-Knox offers services that include: adapting towers to sites, engineering towers to *established* specifications, modern fabrication, and experienced erection assistance.

For details write for Microwave Tower Booklet 2538.



BLAW-KNOX COMPANY
Equipment Division
Pittsburgh 38, Pennsylvania

MICROWAVE TOWERS

Guyed and self-supporting towers for Microwave, AM, FM, TV, Radar, Communications . . . Transmission Towers . . . Parabolic Antennas . . . Special Structures. All custom built to meet your requirements.

AT AVON LAKE, OHIO . . . a 100 foot tower operates 11 miles from the companion tower at Lorain. Note ring mounts permit additional antenna to be easily installed . . . allow precise 360 degree orientation. Blaw-Knox towers maintain rigid requirements for torque and deflection.

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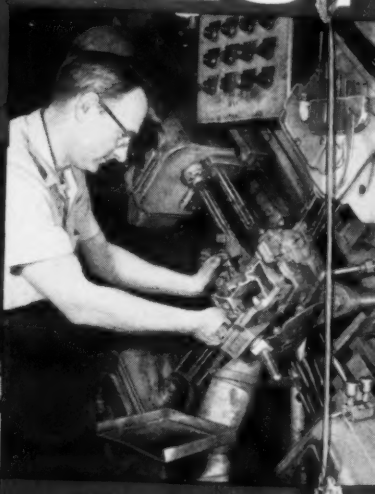
WE GO TO A LOT

Research

Design

Materials Testing



Parts Product

Strowger Automatic is the choice of leading telephone companies, for a very sensible reason —it insures *minimum maintenance expense.*

This is a proved fact. And back of it is a simple truth: Strowger Automatic is *made better.* Constant research, careful design, meticulous quality-control of materials are only the beginning. After these sound preparations come tooling to highest standards and production to extra-close tolerances. Nothing is left to chance. All operations are safeguarded by a scientifically-planned series of tests and inspections.

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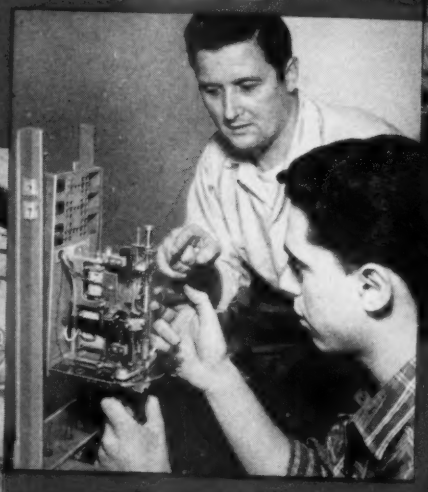
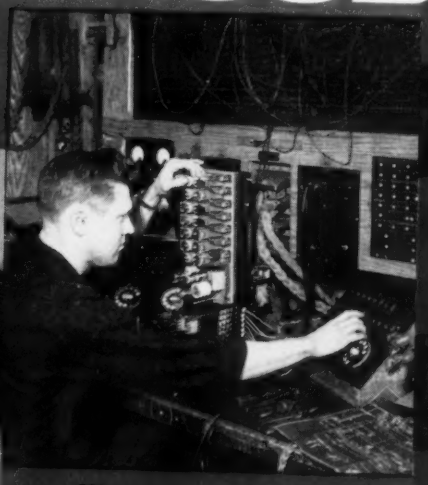
TROUBLE

OF



Assembly



Final Inspection

. . . so you won't have any!

It's a lot of trouble. But it saves you a great deal of maintenance, money, and headaches. Plan now to enjoy these savings by converting to Strowger Automatic. Get in touch with your friendly Automatic Electric representative—he'll be glad to help you. Address: *Automatic Electric Sales Corporation, Northlake, Illinois. Or call FIllmore 5-7111.*

AUTOMATIC ELECTRIC

A member of the General Telephone System – One of America's great communications systems

GENERAL TELEPHONE SYSTEM

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Report of USITA Plant Committee

*By H. P. SIEBKEN**
Chairman

BY ACTION of the (USITA) board of directors last fall, a new USITA Engineering Committee was created to handle certain subjects previously assigned to the Plant Committee. The newly created Engineering Committee, as well as the Plant Committee, consists of a chairman and four members.

In May, 1957, a joint meeting of the engineering and plant committees was held at Chicago in order to organize, divide the responsibilities, and set up working sub-committees. After a day of joint meeting, each committee met to program its future activities.

It was recommended by the Plant Committee, which will be responsible for all construction and operations, that four sub-committees be created, each with one of the four members of the committee as a director. The recommendations were that in the future the following four subcommittees be created:

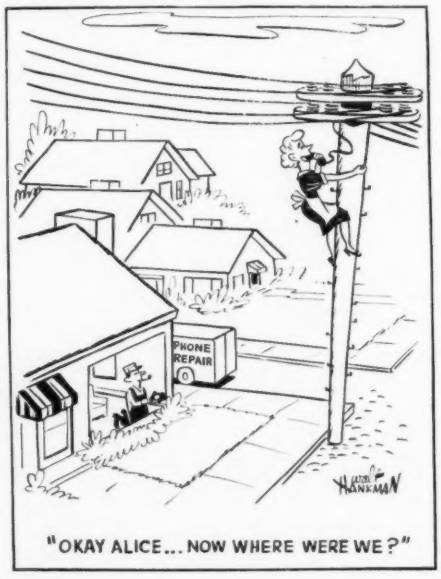
1. Outside plant construction.
2. Outside plant maintenance including station installations.
3. Installation and maintenance of central office and PBX equipment.
4. Safety and plant training.

It was the consensus that three to five men chosen from the industry be appointed to each sub-committee to assist the members of the Plant Committee.

At the Chicago meeting of the committee, arrangements were completed for the presentation of committee papers and the subjects of talks to be presented at the October, 1957, Plant Conference. Each member of the committee will present a paper on his assigned subject which will be available at the conference for distribution; since there is insufficient time these will not be presented in person.

In addition, four subjects for talks were agreed upon and later the speakers obtained for these presentations. These proposed talks will be reproduced and available after the close of the Plant Conference.

During the year committee members have attended various meetings to represent the industry. In April, 1957, a member represented the USITA Plant Committee at a meeting held in the American Telephone & Telegraph Co. offices in New York, at which "Maintenance and Service Problems in Connection with Private Line Services" were discussed. The commercial phases of this activity are handled by the Commercial Committee, under the chairmanship of K. L. Lawson of Lincoln, Neb. Later in April, 1957, the committee was represented at a meeting held at the REA offices in Washington, D. C. This was a meeting with the industry's manufacturers covering the revision of specifications on covered wire and plastic cable, as well as specifications on color codes for same.



"OKAY ALICE... NOW WHERE WERE WE?"

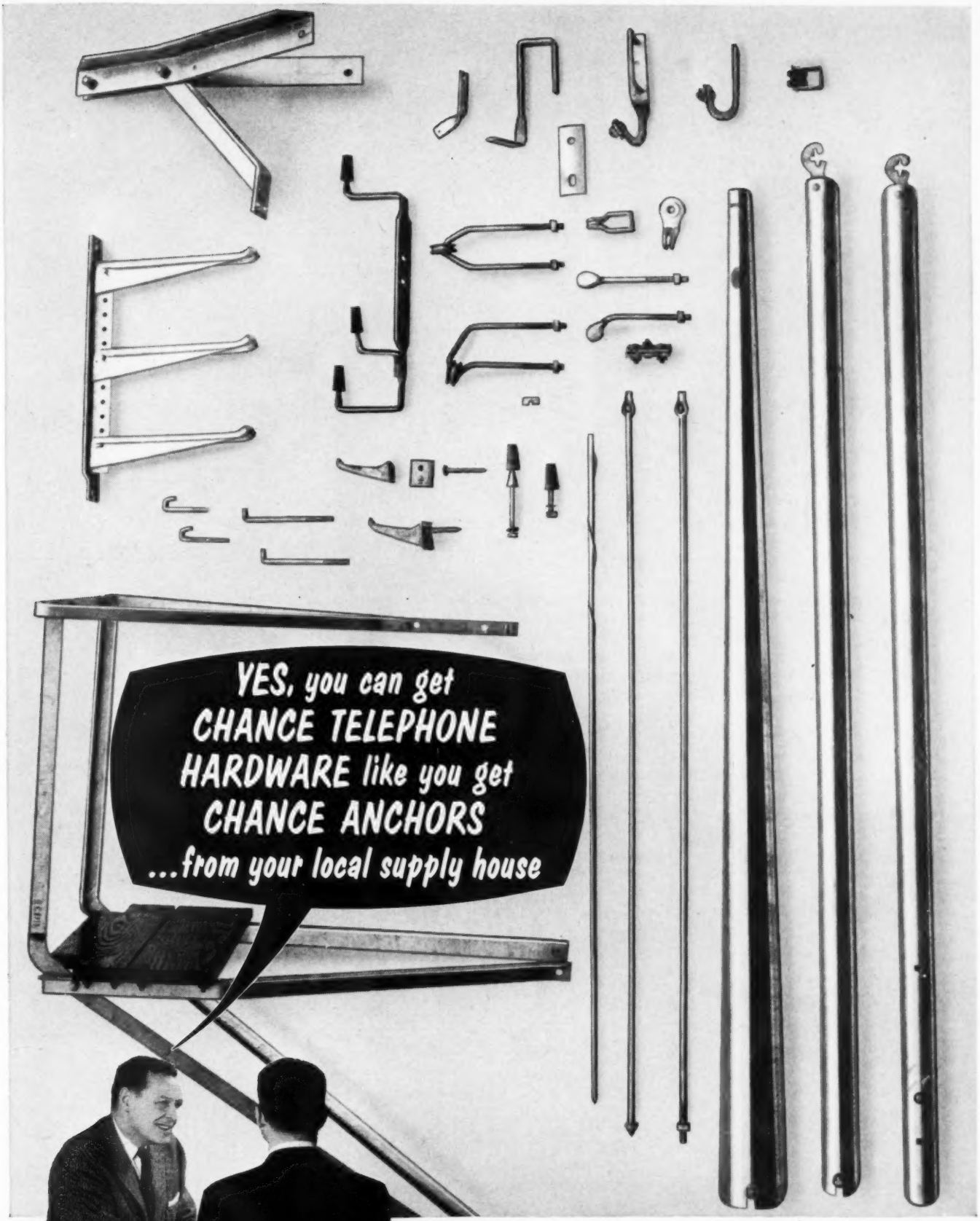
The committee has been kept up to date on civil defense. The original meeting was attended by W. M. Driggs for the Plant Committee, and since that time we have been kept up to date through the USITA office and the American Telephone & Telegraph Co. on all matters pertaining to civil defense and the SAGE system. During September of this year, the committee was also represented at a meeting called by the AT&T at New York on "Dataphone Service" and a report will be submitted later.

Members of the committee have been called upon by various Independent telephone companies for advice or suggestions which we hope have been sufficient and satisfactory. At any time any or all members of the Plant Committee are ready to assist on any problems which may be called to their attention. It is felt that the members of the committee and sub-committees are very well qualified in their respective fields and that we should be able to advise on any construction or operation problem.

During the committee meeting this May at Chicago, the topic of "Grounding" was presented and discussed and it was decided that this matter should be referred to the Engineering Committee for further action.

The committee appreciates the cooperation of the sub-committee members and the companies that have made this possible.

*Mr. Siebken is General Manager of General Telephone Co. of Madison, Wis.



From anchor to pole top—Chance makes everything you need in guying materials and pole line hardware—available from your local supply house. The Chance line of telephone hardware and guying materials includes thousands of items that meet or exceed industry standards.

You *know* the quality of Chance Anchors. To get the same high quality in pole line hardware—and the same fast service—ask your local supplier for the full Chance line for all your line construction needs.

A • B • CHANCE CO • CENTRALIA, MISSOURI

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Causes and Cures of Induced Noises

By P. K. FUGATE

(A Plant Conference Address)

WHENEVER a transmission engineer discusses the matter of noise and crosstalk on telephone circuits he can usually be expected to deliver a rather lengthy discourse which will include words and terms, all of which to him or another transmission engineer have clear and definite meanings, but which can ordinarily be counted on to hopelessly confuse anyone who has not specialized in the transmission and inductive interference field.

In fact one official of the company for which I work has stated that if I talked in normal conversation for five minutes without once mentioning decibels, megohms, coupling, or some other technical term, he would assume that I was either ill or putting on an act of some kind.

In my presentation today I may disappoint those of you who are transmission engineers, as I am going to attempt to explain the more common causes of induced noise on telephone circuits, and outline some measures for eliminating or minimizing these conditions without the use of unusual words or extensive mathematics.

For purposes of our discussion, we shall define induced noise as any extraneous energy on a telephone circuit which interferes with the transmission or reception of the desired intelligence. This definition includes crosstalk; central office noise originating in the rectifiers, ringing machines, supervisory tones, switch gear and other equipment; together with circuit noise resulting from thermal conditions, static, or inductive exposure to power lines.

You do not need a transmission engineer equipped with several thousand dollars worth of testing equipment to tell you that a noise condition exists in your plant since you, your operators, and unfortunately your subscribers, are fully aware of it after attempting to carry on a conversation over the lines involved. In some cases, the services of a transmission engineer or technician may be required to find a cure for the condition, but in most situations basic knowledge of the more common causes and remedies together with the application of ordinary "horse sense" will produce a solution.

A complete study of inductive interference would involve reams of written matter, but in the time we have we can cover a few of the most general conditions.

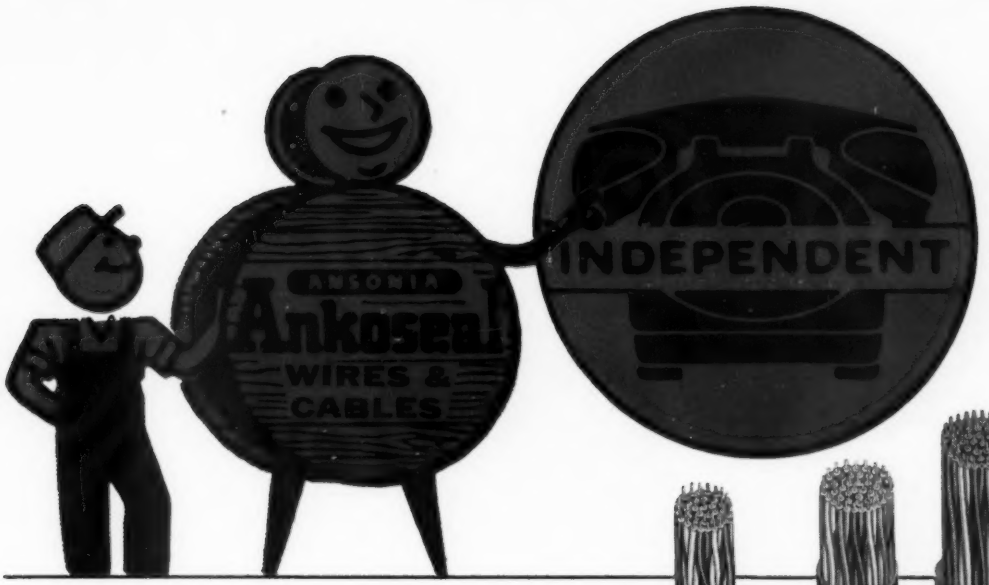
Since crosstalk resulting from conditions in the outside plant, and inductive interference from exposure to power lines are very closely related, we shall consider these together. In both cases, the unwanted transfer of energy results from the close relationship between the circuits involved whether power or telephone, conditions on the disturbing circuit which cause it to radiate energy excessively, and conditions on the disturbed circuit which make it receptive to the unwanted energy in the form of noise or crosstalk.

Most inductive coordination measures make use of one basic principle. Since a difference in voltage between two points is necessary for the flow of energy through an electrical circuit, no current will flow between two points which are at the same potential no matter how high this voltage may be. This means that in a metallic telephone circuit the wires at both ends may carry substantial voltages to ground but no current will flow through telephones connected to this circuit if the voltages on both wires are identical.

As a concrete example, we will first consider an open wire metallic telephone circuit which is paralleled by a power circuit, either on a joint pole line or separated by a road. In this situation, each of the telephone wires and the power conductors can be considered as plates in an electrical condenser with a resulting transfer of alternating current voltage from the charged power line conductors to the wires of the telephone line. It is only reasonable to assume that a higher voltage will be produced on the telephone conductor which is nearest the power line than on the telephone wire located more remotely. In normal telephone open wire construction, this difference in distance is 12 inches or less as compared with a spacing between the telephone and power conductors of from a few feet to a hundred feet or more, but since the disturbing circuit is usually charged at several thousand volts to ground the small difference in induced voltages on the two wires of the telephone circuit can be more than enough to cause excessive noise.

In this connection, it should be remembered that practically all power lines are transmitting not only the desired 60-cycle energy but also a number of higher frequencies resulting from conditions in the generating source, the transmitting network, and the various types of load on the power system. These higher frequencies, called harmonics are of much more importance as noise producers than the 60-cycle fundamental. We can see that if both telephone conductors in the circuit were in exactly the same spot the induced voltages would be identical and no noise would be experienced.

Since it is physically impossible to produce such a condition on a metallic telephone circuit in open wire construction, some other method of equalizing



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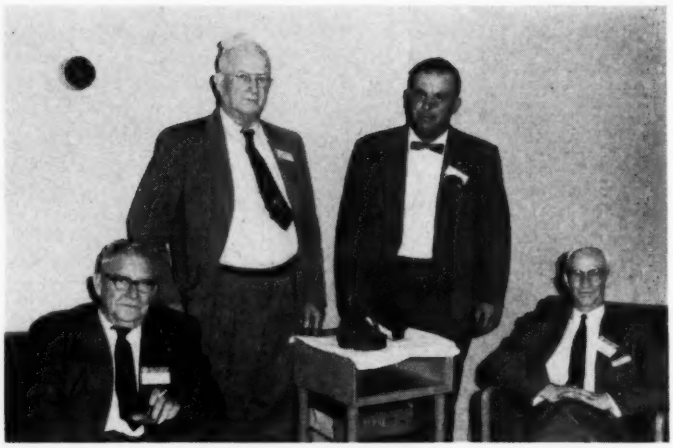
the induced voltages must be found. This is accomplished by transposing the telephone open wire circuit so that throughout a given exposure each wire of the circuit is alternately the nearest and farthest wire to and from the source of interference. In the case of crosstalk between open wire circuits, practically the same condition exists, and although the voltage impressed on the disturbing circuit is only a small fraction of that on the power line, the spacing between the two circuits is also greatly reduced with the result that a relatively small voltage on the disturbing circuit will still produce undesirable voltages on the disturbed circuit. It is now obvious that each circuit on an open wire lead must be transposed with regard to every other circuit on the lead as well as with regard to the power exposure. These measures are accomplished by the application of previously developed transposition patterns.

Details on satisfactory transposition schemes have been published in magazines relating to the telephone industry and are also available from most suppliers of telephone equipment.

In addition to the condition just outlined another situation exists in our noise problem. The power line and its associated ground return path may be considered as the primary winding having one turn only of a transformer, the secondary of which consists of each telephone conductor and the earth return. Since no iron core is present, this transformer is of course very inefficient, but it is adequate to develop another source of voltages between the telephone conductors and ground. Transposition of the telephone circuits once again provides a means of equalizing the induced voltages on the two conductors of a given telephone circuit.

Let us assume that our telephone open wire circuits have now been properly transposed, with the result that the induced voltages to ground on the two conductors of each of our circuits are equal. In such a case, telephone instruments could be connected across the circuits at both ends and, if the standing voltages on both wires of each circuit are identical, no noise would be heard in the receivers. As usual in practical applications a perfect balance is impossible but to all intents and purposes the noise level is not noticeable.



Left to right, J. C. Hesse of Chicago, Ill., D. J. White of Fairfield, Ia., W. C. Daubendiek of Jefferson, Ia. and R. E. Forsythe of Butler, Pa.

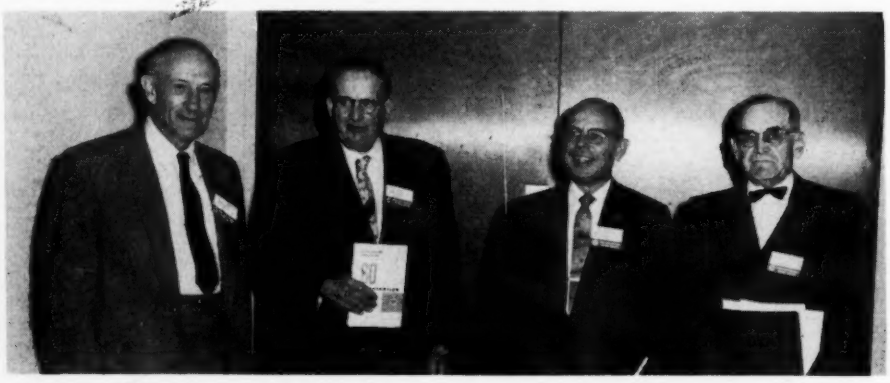
Under this condition other factors in the make-up of our telephone line enter the picture. If any substantial leakage to ground from the telephone wires exists more energy may be drained from one wire than from the other with the result that unequal noise voltages appear at the ends of the circuit causing objectionable noise in the receivers of the telephones. If one wire of the telephone circuit has greater resistance than the other wire, the greater drop in voltage through the higher resistance wire will again result in unbalanced voltages at the ends causing noise. These same conditions also make the circuit involved much more susceptible to receiving crosstalk from other circuits on the lead. Since the noise conditions involve alternating current, capacitative or inductive unbalances can also contribute to the noise condition. In ordinary situations of this nature, we are talking about tree grounds, burned or dirty protector blocks, and telephone ringers when connected from one side of the line ground, all of these conditions being classed as leakage paths to ground.

The most common cause of unequal wire resistances is found in high resistance joints in the wire itself, although such resistance unbalances can also exist in cases where the second wire of a circuit has been added some years after the first wire was placed as in the metallicizing of grounded circuits. Unbalances due to unlike wires are usually compensated for by the cutting of transpositions in the circuit when metallicized, but in some cases the balance thus obtained is not adequate and a noisy circuit results.

After the circuits enter the exchange cables, their susceptibility to induction from power lines and other outside sources becomes much less, in fact practically non-existent, since they are protected from outside radiation by the grounded lead sheath or the metallic shield of plastic sheath cable. Spacing between wires of a given circuit also becomes very small, but at the same time the spacing between circuits is also small. As a result, voltages to ground existing on a pair feeding an exposed open wire lead may induce substantial voltages to ground on a cable pair which in itself has no exposure. In this connection, it might be well to point out that a similar situation can exist in open wire leads where substantial voltages induced on a toll circuit by a remote power exposure are reinduced by that circuit to an adjacent open wire circuit carried on a section of the lead, which itself has no exposure to power.

As a result of these conditions, it is not uncommon to encounter noisy circuits which have no open wire other than the subscriber drops emerging from the cable or which have no direct power parallels. Such secondary noise on unexposed circuits can result from improperly spliced drops or wire, deteriorated drop wires passing through trees, improperly made or corroded connections at the cable terminals, improperly spliced pairs in the cable, or

(Please turn to page 101)



Left to right, W. J. Scheidler of Greensburg, Ind.; E. R. Dean of Hood River, Ore.; C. S. Cadwell of LaGrange, Ill.; and J. K. Stoltzfus of Birdsboro, Pa.

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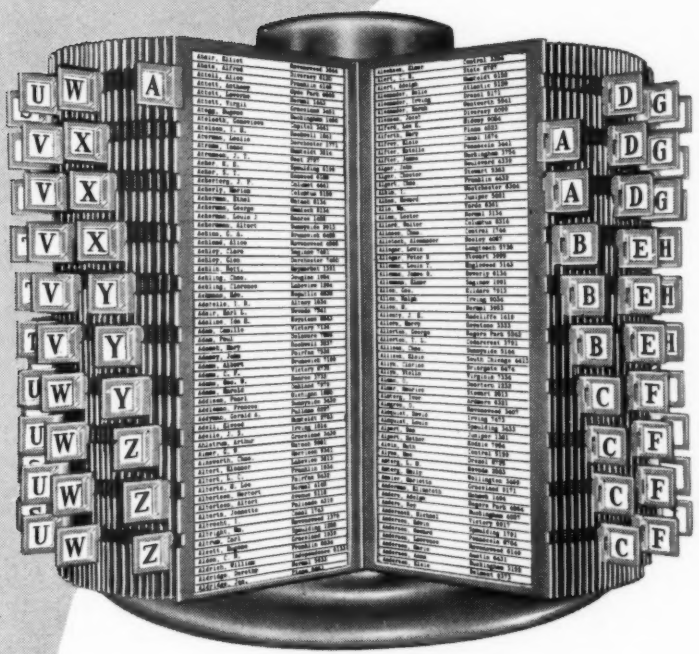

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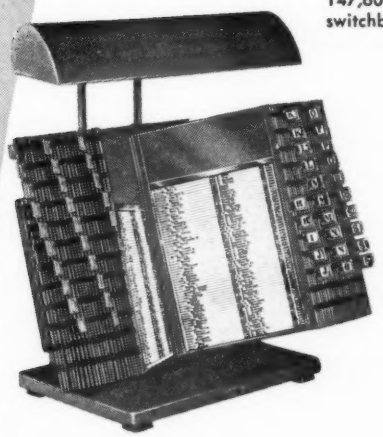

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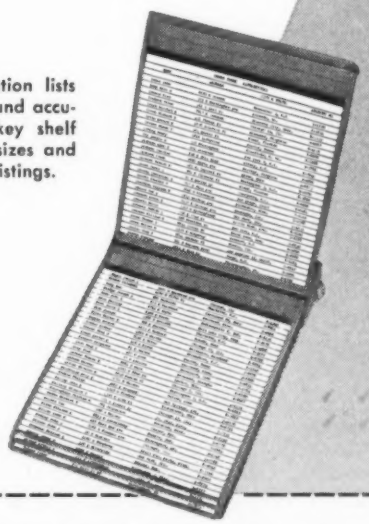

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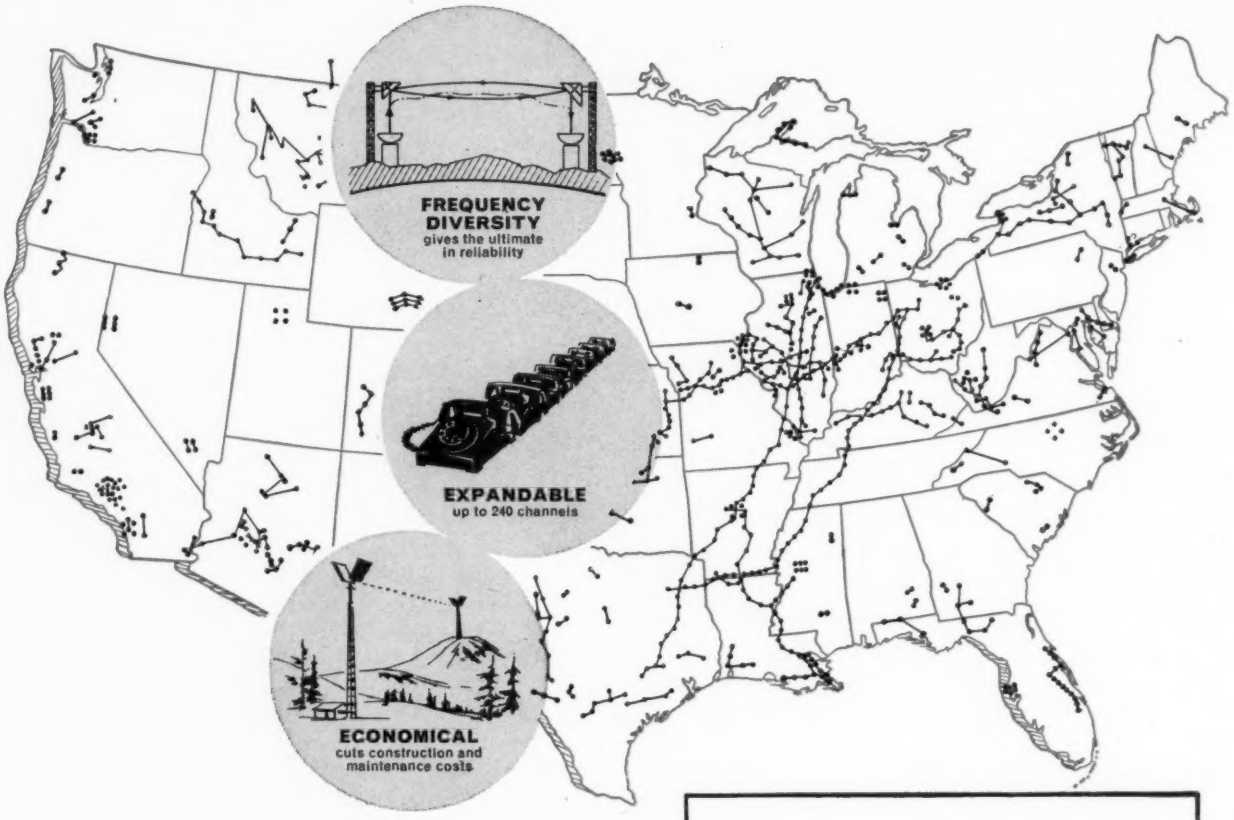

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line circuit unbalances in the central office equipment itself. Tree conditions in open wire lines are a heavy contributor to many line noise problems.

In connection with noise on circuits in cable plant, it should be remembered that the degree of shielding secured from the cable sheath or shield is substantially affected by how adequately the sheath or shield is grounded. In many instances, noisy cable plants can be cured by improving the central office ground to which these cable sheaths or shields should be grounded, and by adding good grounds at the ends of the cable runs. In many cases, it is also highly desirable that the cable sheath or shield be bonded at frequent intervals to the neutral conductor or ground wires of Y connected multi-grounded neutral power systems, especially in cases where both the power system and the telephone cables are carried on joint poles.

In our central offices, we find a very rich source of noise producing conditions and devices. In the first place, excessively worn or dirty jacks and plugs, together with unsatisfactory contacts in keys or relays, can produce resistance unbalances on which induced voltages can act resulting in noisy lines or connections. Unbalanced conditions also frequently result from improperly maintained relays and switches in automatic offices. These conditions can result in excessive noise when two ordinarily quiet lines are connected together, sometimes resulting in a subscriber complaint which is extremely difficult to trace. There is nothing new in mentioning the objectionable frying and popping noises which can also result from improperly maintained central office equipment.

Practically all central offices contain a wide variety of inductive noise producing items. Among these are battery charging rectifiers, ringing machines, and tone generators. This condition is recognized and the manufacturers of central office equipment generally provide means for preventing radiation from these devices from entering the telephone circuits to an undesirable degree. These measures include shielding which is only effective when well grounded. For this reason, it is essential that the best possible central office ground be secured regardless of the size of the office involved. Bonding of the central office ground to a city water system if available is always highly desirable and, in many cases, bonding to the neutral wire of the power service feeding the central office will also result in substantial noise reduction. This last measure is especially effective if the power system is Y connected with multi-grounded neutral wire. Another important result of good bonding and grounding lies in improved protection of the central office equipment.

Left to right, L. M. Lomax of Leesburg, Fla.; S. A. Lane of Russellville, Ark.; H. E. Hussey of Durham, N. C.; James C. Hageman of Lorain, O.; C. G. Elsea and D. H. Reid, both of Charlottesville, Va.

Now, that we have outlined the most common contributors to inductive interference, we should consider simple test measures for locating the cause of a given condition of this type. For the simplest type of situation, we can assume that we have a noisy rural line composed of several miles of open wire reaching the central office through a length of exchange cable. As is usually the case, the open wire section of this line is paralleled through most of its length by a power line located on the opposite side of the road. The first procedure should, of course, be to test the line for insulation leakage, using the battery and voltmeter method with which practically all telephone men are familiar. If either poor insulation, or a low resistance ground on one side of the line, are found all protector blocks should be checked and cleaned, and the line should be patrolled for tree conditions. If considerable vibration of the dc voltmeter needle is observed, it would then be well to use an ac voltmeter to determine the possibility that a power service wire may have sagged into the telephone line. In the event that the insulation is good and no power fault to the telephone line exists, it is well to inquire into the past history of the line to determine whether this condition is of long standing or has occurred only recently.

If the noise has occurred only recently, and no known changes have been made such as the construction of new power lines, it is reasonably safe to assume that the transposition scheme is satisfactory. The line should then be checked for other resistance unbalances. If the line employs bridged ringing and all ringers are equipped with series condensers, the test can be very readily made using a Wheatstone bridge connected for a Varley test at one end of the line, and placing a short and ground at the opposite end. Procedure for such a test is included in the instruction book ordinarily furnished with each Wheatstone bridge when it is purchased.

This test may be supplemented by a loop resistance test, the results of which can be compared with calculated loop resistance values for the circuit involved. The results of these two tests will determine whether or not a search for high resistance joints in the wire should be made. If the over-all tests indicate a possibility of high resistance joints, sectional tests can be made with the Wheatstone bridge as a Varley loop testing device, following which any suspected sleeves or joints in the wire can be tested with an ohmmeter or by other means which have been covered in detail on previous papers presented at USITA meetings, or published in various telephone magazines.

One very simple method of locating high resistance joints or connections on noisy lines, involves the use of only a test receiver. This receiver can be bridged around a suspected sleeve or joint using test leads or a clip device at the end of a pole. If no noise is heard in the receiver, the sleeve or connection has low resistance and probably is satisfactory. When high resistances are encountered, noise will be heard in the receiver, the loudness depending on the resistance. This method is not satisfactory when a number of joints are involved with each one having only a few ohms resistance. However, a single joint having high resistance often may be the cause of a line noise situation.

Another rather simple check to determine the location of noise producing unbalances consists of the following procedure:

(1) While listening on the noisy line at the central office through the switchboard or the automatic switching equipment, have a solid short placed on the associated main distributing frame protector. Some reduction in noise will

(Please turn to page 157)

XUM

The Who, What, and When of Equipment Maintenance

*By R. K. GHORMLEY**

(A Plant Conference Address)

"IN HUMAN life there is constant change of fortune; and it is unreasonable to expect an exemption from the common fate. . . . Life itself decays, and all things are daily changing."

Plutarch said that. Anyone who has had his eyes open at all in the last decade or so will readily admit that the telephone industry has seen a number of changes. And, most of us can not expect to obtain an "exemption from this common fate." In one way or another we practically all have been, or soon will be, affected by the changes in the telephone art. And that is as it should be in my opinion; for these "changes" have seen an ever increasing use of the telephone—a growth healthy and vigorous that has been good for the country and, I believe you'll agree, good for most of us.

This growth and change has been many-sided. We have witnessed on toll lines, for example, a moving on from ring-down operation, to operator toll dialing, and now to subscriber Direct Distance Dialing (DDD). Admittedly, not all of us have been affected to the same extent by this program. For many of us this period has meant the conversion of exchanges from manual to automatic operation. Or possibly the instigation of operator dialing. Or even more recently, Direct Distance Dialing calls may be finding their way into or out of our equipment.

Equipment has become more complex —both local and toll. Our simple magneto or common battery cord circuits are now displaced by a strange device that goes up and around, or across and in, or clickety-clickety (have I missed any) at the mere wagging of the calling party's finger!

I believe you will agree that the day when "tip and ring" were king has gone behind us. I will not repeat the tired old joke about the old-time telephone man who admitted that he no sooner had the tip and ring straightened out in his mind after many years of struggle than along came the "sleeve" to confuse him again.

Now we have "EC" leads, "CX" leads, "E" leads, and "M" leads, "SX-CX" leads, "PD" leads, "A" leads, "B" leads—it's enough to make the old-timer's head start to whirl again! (We have nearly enough to name a government agency!)

But what is the connection between all of this "progress" and the matter of our equipment maintenance? I would like to suggest that as our equipment functions have grown more complex and varied, so has the necessity for our maintenance to grow more complex and varied. As a basis for our visit I have chosen three "W's"—*Who, What, and When?*

R. K. GHORMLEY

The "*Who*" of equipment maintenance seems to me to be a logical place for us to start. "Who should be concerned with equipment routine maintenance?" The answer is short—"Anyone charged with the responsibility of operating telephone equipment." I believe that this is true if you are a one-town company. I believe that this is true if you are a multi-state company. And I believe that this is true if you fit some place between those extremes.

Indeed, the problems are different and the procedures will vary. But, whether you are small or large, routine equipment maintenance is one of your concerns. And, whether you are the vice president and manager who has administration over the whole outfit of people, secretaries, and heads of sections or are the switchman who has administration over the pliers, screwdrivers, and hunks of solder—efficient maintenance is cause for thought. I don't pretend that these are new ideas. You have heard them before—but they bear repeating.

Our second point is the "*What*" of equipment maintenance. (a) "What are we trying to do with equipment maintenance?", and (b) "What do we maintain?" First, what are we trying to do? How would you answer that? Let me phrase it in a way that may suit our purposes—our main objective in equipment maintenance is to keep it in proper working order with an optimum balance between maintenance costs and service impairment. Maybe that is too general, but we will be coming back to

*Mr. Ghormley is General Equipment Engineer of Lincoln (Neb.) Telephone & Telegraph Co.

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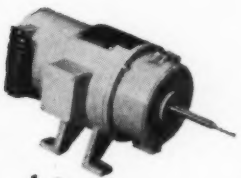

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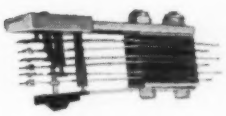

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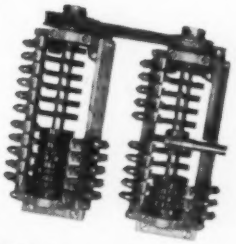

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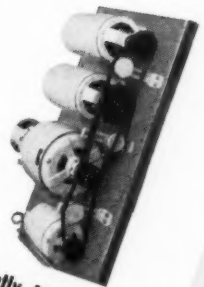

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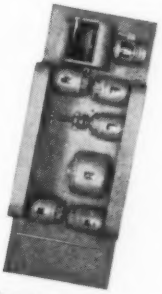

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a part of it later on, so let's move along to the (b) part of "*What.*"

"What do we maintain?" A somewhat off-hand answer is "Almost everything." Let us address ourselves to a few specific examples.

In recent years, and often because of the changes in the state of the art, we have had to give more attention to what was once a pretty simple procedure. For example, a short-haul toll trunk operated ring down with 20-cycle signaling got a pretty good check when you found that the distant operator answered after you had plugged in and rung. Even the comparatively advanced step of using 1,000-cycle ringers required only a tiny bit more diligence in checking the operation.

But, now let us decide that we are going to start to dial over that trunk. Even being able to get the correct number at the distant end a couple of times is not now a sufficient check. A good job would require us to make a measurement of the dial pulses at the receiving equipment in the distant point to be sure that it is faithfully reproducing the pulses started in at the sending end of the line. Without such a check we might be on the ragged edge of "just succeeding." All it might take to cause failure would be a little rain on our wire line, or a dial a little faster than normal, or voltage somewhat too high or too low, or some similar factor just waiting to shove us across the ragged line into the failure column of a "wrong number reached."

And, again, back in your magneto exchange days you weren't especially concerned with a little leakage to ground on a subscriber's line. A wet or icy day with the lines dragging along through the brush and trees may not have caused you much trouble. People could still signal and talk in fairly decent fashion.

Now, that you're all converted to your shiny new automatic equipment, you are apt to find it takes more attention on your part to those lines. Just you allow the brush and trees to get all mixed up in them, and some rainy day you may have some lines out of service until the sun comes out again.

Inside the office the type of maintenance required is influenced as to details by the type of equipment used. Small and large offices do not have the same specific problems, but the general problems are much the same.

A small office may have only one charger, whereas a large office might have, say, a string of five chargers with the last one seldom being called upon to function except for a dark and stormy winter day. The small office hardly needs a routine to test its charger—it's already working. But, it hardly seems prudent in the large office to wait for the dark and stormy winter day to see if all chargers will function correctly.

Left to right, L. F. Shepherd of Erie, Pa.; E. M. Blakeslee of Santa Monica, Cal.; J. R. Huntley of New York City, and R. W. Siemund of Benson, Ariz.

And, large or small office, there are some things which take on increasing importance as we face more and more inward subscriber dialed traffic. One of these, it seems to me, is the volume level of the various tones which a calling subscriber encounters. There are two most commonly encountered—the audible ringing tone (frequently referred to as "ring-back tone"), and the busy tone encountered when a called subscriber's line is busy. You may think that proper levels for these tones is not a matter of life and death, and maybe you're right. However, let us assume the case of an office where no attention has been paid to this detail since the day of cut-over and where the tone level is abnormally low. Local subscribers used to complain about not hearing those tones very clearly, but after a while they got tired of complaining. (Since there haven't been complaints for the last few years, the tones must be OK.)

When a toll call comes into that exchange and is being handled by an operator, she is likely to stick around even in the absence of ring-back tone and either get an answer or go to some inward operator for help.

Tomorrow comes, and when some subscriber direct distance dials his own call to that inaudible "audible" tone and the called party is not at home to answer, he draws a "blank." It is one little unfavorable experience that tends to make the calling party lose confidence in this new-fangled Direct Distance Dialing system. As an industry, we can't afford to let something like that snowball very far, or we'll be getting into serious trouble.

New equipment features have shown up in the last decade—in fact in the last half a decade (five years, to save your dividing it out). The now-familiar "2-5" numbering scheme was just becoming known five years ago. Now, it is generally conceded to be a "must" for any new conversion, whether or not it is initially used. We will pass by any discussion of the 2L/5N system as such. Our interest is in the fact that where an office has 2L/5N equipment, a new point requiring attention has arisen. This widely-used method to soak up the first digits of a seven-digit number absorbs them on some switch—usually the first—in the switch train. Since this is a relatively new equipment feature, it is prudent to pay a little extra attention to such switches until their maintenance requirements have been decided.

As subscriber Direct Distance Dialing spreads and brings with it the desirability of uniform procedures, provisions for intercept in exchanges both large and small have been affected. Maybe you already have in service or contemplate it, the provision of recorded intercept facilities. I believe it to be a reasonable way to comply with the accepted requirements for intercept in smaller offices and to give substantial relief to operator loads in larger offices. If you choose to use this method, you will certainly wish to adopt some type of maintenance routine to check the quality and volume level of such recorded message. Until you know how long it will go without corrective maintenance, you will probably wish to keep close tab on its performance. It may come as a surprise to you when I suggest that you can't always believe what some salesman says his equipment will do. "Ask the man who owns one" if it is possible!

And now we come to the "*When*" of maintenance. By "*When*" I'm thinking of the "how often" aspect.

I suppose if you and I stood on the corner of State and Madison here in Chicago and asked the opinions of the first 100 different telephone people who passed us concerning "how often" for

(Please turn to page 160)

SUPERIOR CABLES

Better communication cables . . . completely insulated and sheathed in modern plastics!

TEL-C

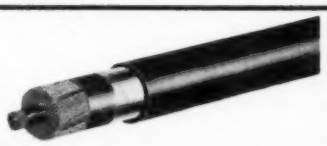
For all aerial and duct use. Meets REA Spec. PE 14. 6 to 909 prs. 24 and 22 ga. 6 to 404 pr. 19 ga. Quadded or composite.

TEL-CA

For aerial, duct or direct burial installation. Extra mechanical protection. 11 to 202 prs., 24, 22 and 19 ga. Quadded or composite.

TOLL

Available in pairs, quads and in composite with regular exchange area cables. Meets rigid electrical requirements needed for toll service. Conductors meet ASTM B-3.

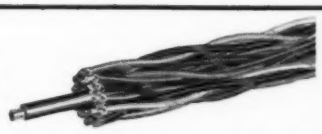


RDC

For extension of service in rural areas where long runs are required. Color-coded. High strength steel support wire. 1-16 prs.

UDC

For short run installation where demand for service is high, low-cost construction is required. Self-supporting. Color-coded. 6 or 16 pr. 24 ga.

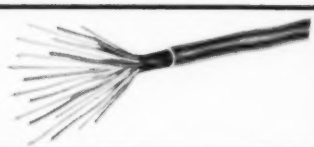


COMPOSITE

Complements of different gauges provided under one sheath to meet engineering requirements. Same high standards maintained.

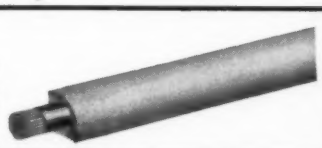
INTERCOM

Inside wiring cable, multiple conductor paired. Fully color-coded for intercommunication, inside telephone, sound systems. Special vinyl jacket.



QRC

Quarter-round shaped jacket in choice six std. colors. For use in offices, hotels, etc., for intercommunicating and sound-systems. Up to 51 prs. Features neat, quick, easy installation.



INSIDE TELEPHONE WIRES & CABLES

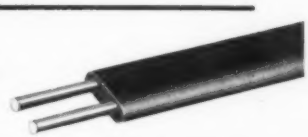
For inside buildings to extend circuits from outside terminating devices to station sets. Jacketed inside-outside wire. Duct wire (twisted). Flat web type. Jumper wire. Distributing frame wire. Ground wire.

PLW .083S

.083 inch galvanized special steel wire conductors. Insulated in parallel with high molecular weight polyethylene. Self-supporting.

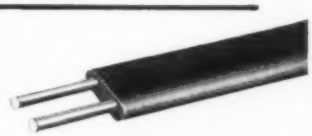
PLW 214 CW

14 gauge solid copperweld conductors. Same insulation as PLW .083S to meet very rigid electrical standards. Self-supporting.



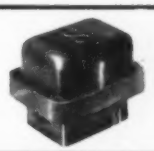
PLW 212 CW

12 gauge solid copperweld conductors. Same insulation as PLW 214CW. Self-supporting. All PLW types for long drop runs at minimum cost.



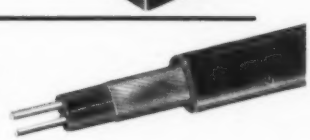
PLWT 1 - PLWT 2

Terminal is self-supporting on line wire. Simplifies drop-line connections. Provides continuous positive contact. Use with Superior PLW.



DB 217S

Direct burial wire, spiraled flat steel strip shield for maximum resistance to damage from road or farm machinery and equipment.



DB 217B

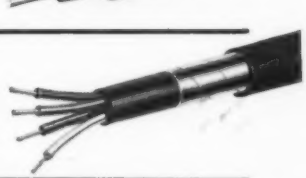
Direct burial wire, longitudinal bronze shield to resist damage from insects and rodents. Also use in areas conducive to lightning activity.

DB 217

Non-armored type wire for uses in areas where conditions are normal. All DB wire available with 17 or 16 ga. conductors.

"B" SERVICE WIRE

For direct burial use. Resists physical damage. Excellent protection against lightning. 2 pr. 20 ga. copperweld conductors. 40% conductivity. Color-coded.



"SUPER-SPLICE"®

Splice sleeve with one end sealed. Filled with insulating and waterproofing material. Use to keep splices waterproof. REA standard.

INDEPENDENT

For detailed specifications, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION • Hickory, North Carolina

XUM

Maintenance of Rural Distribution Wire

*By O. F. KINSEL**

(A Plant Conference Paper)

MANY companies are using rural distribution wire (RDW) in various sizes to quickly supply service to applicants for telephone service in new housing developments and rural areas. It is also used under emergency conditions where restoration of telephone service is essential. It is going to be used more and more by the smaller companies because it does not require the skilled men as does lead cable or plastic jacketed cable in the splicing and repair. With the increased use of rural distribution wire, an immediate need for proper maintenance and repair has developed.

One of the first steps in maintenance is the best possible installation of this wire. Extreme care must be exercised in the handling of the wire during its initial placement so that the insulation is not damaged. The wire must not be dragged on the ground or pulled over objects that could in any way injure the wire, but should be placed on rollers when installing and tensioning for sag. If the insulation on the support wire is damaged, it should be restored so that the wire will not rust. Vehicular traffic should never be allowed to travel over the wire.

The junction of this wire with open wire or cable should be protected with approved line arrestors which should be properly grounded.

Probably, the most frequent cases of trouble will be mechanical injuries resulting from falling limbs, damage by gunshot, objects thrown at the wire, lightning, power burns, and a likely possibility of damage from having power lines pulled over the wire. By all means notify the electric company men to avoid doing this.

It appears that this wire, due to the way that it is constructed, will be subject to the same types of problems that arise with the use of lead and plastic cable. It is our opinion that this wire, relative to maintenance, falls into the same category as cable. When faults occur, such as shorts, crosses, and grounds, they should be located by the use of a cable tone and an exploring coil—the same as in sheathed cable.

Repairs to the above mentioned cases of trouble, after they have been located, may only require the restoration of the insulation. In some cases, however, a new piece of wire may have to be spliced in. Compression type sleeves are available for this job and should be used. The splice should then, of course, be covered with the approved type of tape for this wire. Friction tape should not be used.

Opens, when they occur, can be located by the use of an amplifier and buzzer tone, together with a test probe attached to a pole. An article on this method, along with drawings of the tone and amplifier, appeared in the June 8, 1957 issue of TELEPHONY. I have used this particular method with excellent results and will discuss it later in more detail.

We are emphasizing the use of these tones to encourage their use in place of using a test pick or knife blade to cut into the wire to make tests for opens or to open the pair in trouble in order to determine in which direction the fault may be.

Any punctures of the insulation that are not properly sealed are potential cases of trouble.

To illustrate how important it is not to have the insulation damaged, let me cite a case that occurred in September of this year. I called on the plant manager of a neighboring telephone company and we were discussing the problems that we have had and expect to have concerning the maintenance of rural distribution wire. At this particular time, he was testing on a line in trouble that was working through approximately 20-span of six pair RDW. The test showed that one side of the pair was open in the RDW. We had the troubleman remove the RDW pair from the line wire, short it, and tie it to ground. We went to the other side of the RDW, opened it, connected the buzzer tone across the pair, used the amplifier and probe, and determined the span the trouble was in.

We unclamped the support wire at two poles and lowered it to a convenient height. We then pin-pointed the open in the wire with the tone. During a road construction project about three years ago, the insulation had been damaged and the oxidizing effect of the moisture, together with the flow of current, ate the wire up. There were other spots in this span for a distance of 6 feet or more where the wire had been hit which would in time cause other opens.

We come to one big item in the maintenance of this wire and that is safety. It can not be ridden in a cable car because that would surely injure the insulation. To place a ladder against the wire could also result in injury unless the ladder had a third leg and its sides had cloth or sponge rubber at the point of contact with the wire.

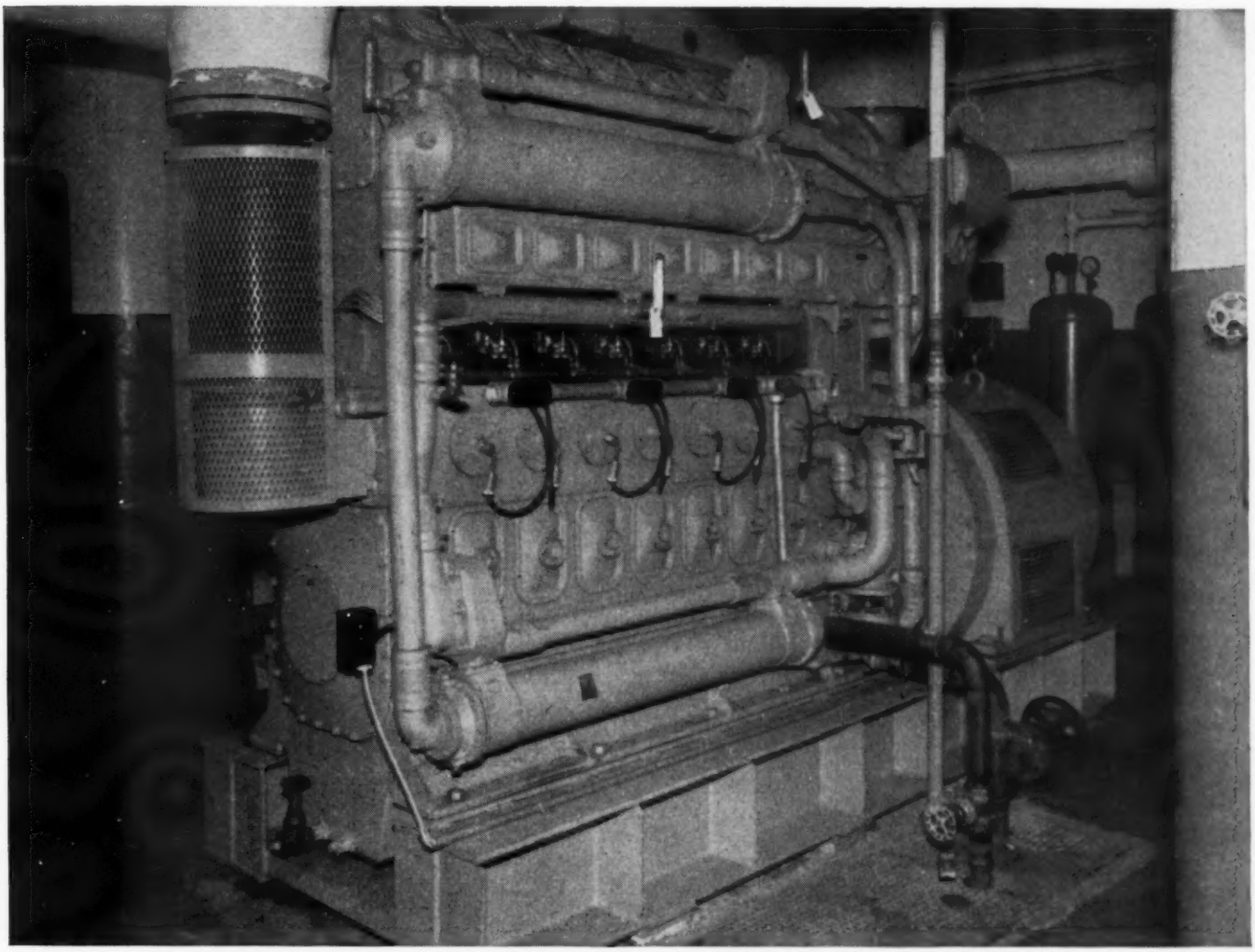
Aerial truck ladders are the safest and most convenient means for making repairs where the cable cannot be lowered or where repairs cannot be made from the pole.

To prevent damage to the insulation by prolonged abrasion, especially by trees, a regular program of tree clear-

(Please turn to page 125)

*Mr. Kinsel is assistant plant superintendent of Northern Ohio Telephone Co. of Bellevue, O.

Ohio Bell answers the call...
FOR DEPENDABLE STANDBY POWER



525 hp. Opposed-Piston diesel provides power to carry full telephone load, essential lighting and power in the exchange.

FAIRBANKS-MORSE DIESEL POWER

The recent and anticipated increase in service made Ohio Bell review standby power requirements in the important Canton-Glendale exchange. Existing battery installations could have been expanded except that expense would have been considerable; floors would have had to be reinforced, and there wasn't the floor space available.

At far less cost, a Fairbanks-Morse diesel-driven generating set now provides a dependable power source to insure stable operations at all times—for any length of time.

Compact and lightweight, the F-M Opposed-Piston diesel packs more power in less floor space and requires no reinforced support. Practically vibration-free and quiet, the Opposed-Piston diesel is an acceptable neighbor in any locality.

Perhaps you should also review your standby power capabilities, and consider that:

—With your entire community daily facing increased demands on high line power, there is less overload capacity for even normal peak-load periods.

—With more automatic toll ticketing systems being installed, a power outage can mean complete revenue loss on unmonitored calls.

—With the increase in channel-miles in your exchange in recent years, chances are that your standby facilities are dangerously inadequate.

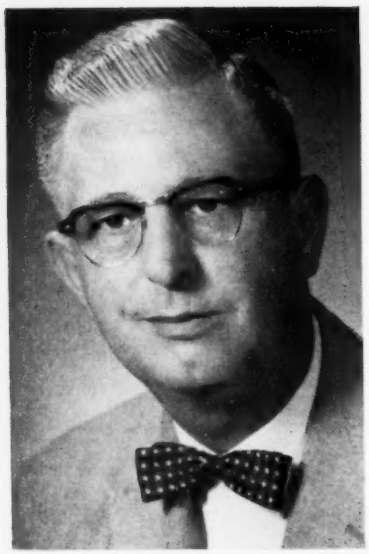
Near you is a Fairbanks-Morse Power Specialist who can answer your many questions about reliable, economical diesel power. Call him or write: Fairbanks, Morse & Co., Dept. TE-1026, Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

DIESEL AND DUAL FUEL ENGINES • DIESEL LOCOMOTIVES • RAIL CARS • ELECTRICAL MACHINERY • PUMPS • SCALES • HOME WATER SERVICE EQUIPMENT • MAGNETOS

XUM



Miss Telephone Service

*By J. R. YEAGER**

(A Plant Conference Address)

IT IS WITH pleasure that I present my topic, "Miss Telephone Service." Her position in the industry is comparatively new. However, we feel that she is one of the answers to the challenge in building public relations. We might call her an emissary of goodwill and, at the same time, provide her with some duties to make her more than self-supporting.

Management has always had problems to meet, but of recent years that of subscriber relations has become one of major importance.

Recognizing that fact, George B. Quatman, president of Telephone Services, Inc., conceived the idea of introducing to John Q. Public a new high in telephone goodwill. Believing in the old adage that "Goodwill consists of 90 per cent of what is done and how it is done and 10 per cent explaining it," Mr. Quatman felt that a comely young lady calling on individual subscribers to check their telephone service would be a successful venture. In addition, she could make necessary minor repairs and adjustments and assist in correcting their service problems. In that way, we could render a personalized goodwill service and accomplish a preventative maintenance program.

As the industry advances in modern telephony, using more and more automatic and electronic equipment, the customer-company relationship drifts farther and farther apart. Establishing a Miss Telephone Service would reestablish the personal touch.

In making the selection of personnel for this position, it is preferable to use a present employe because of her telephone knowledge. However, the person chosen must also have leadership ability, mechanical ability, a pleasing personality, and be attractive to the public. She must have the ability to think for herself. These qualifications are essential. In many cases, Miss Telephone Service will be the only contact between the customer and the company. She *will be* the company.

After selecting the proper person, a complete resume of position requirements and duties should be presented to her. Stress should be placed on the many problems that may arise. It is important, at this point, to impress the applicant that this type of work is not just an opportunity to cruise the community in a company automobile. She must realize that on her shoulders rests the success or failure of the project.

Enrollment in a class in Effective Speaking and Human Relations is the first step in the training program. Tutoring in the course is done by a company department head. All management personnel in our company have had training in this course. Completion of this class assures us that she is well qualified to win friends for the company and convince the public that we function in the interest of humanity.

MISS TELEPHONE SERVICE

The applicant is also given extensive training in the repair, adjustment, and maintenance of the telephone instrument. This will enable her to make any minor repairs or adjustments needed in the average home or business.

Finally, she is indoctrinated as to company policy, financial status, tariff regulations, availability of services, cost of services, etc. At this time, the applicant should be made to feel important to herself and to her position, that management needs and respects her, and that she is part of the company. It is our sincere belief that the employe should know all the facts. Being well informed will make it easier for her to do the job right, than to explain why she didn't.

During this period of indoctrination, the budding Miss Telephone Service is measured for specially designed clothes. Her suits are patterned after the uniform of an airline hostess. Worn with a white blouse and overseas-type cap, she presents an attractive appearance. For summer wear, the suit and cap is natural linen. For inclement weather, a tan raincoat is furnished. The winter uniform and cap is of dark blue cheviot worn with a dark blue belted military style overcoat. On the uniform, the insignia, "Telephone Service," is placed on the left top pocket of the coat and on both sides of the overseas cap. The raincoat and overcoat have the insignias also.

For carrying necessary tools and replacement parts, a tan leather shoulder utility bag is furnished.

In the Lima, O., exchange, a small Italian Isetta car is used for transportation. It is inexpensive compared to American models and very attractive. The car has created much interest and helped to publicize our service.

New bulletin to give you

THE FACTS ON NEW COPPERPLY® WIRE

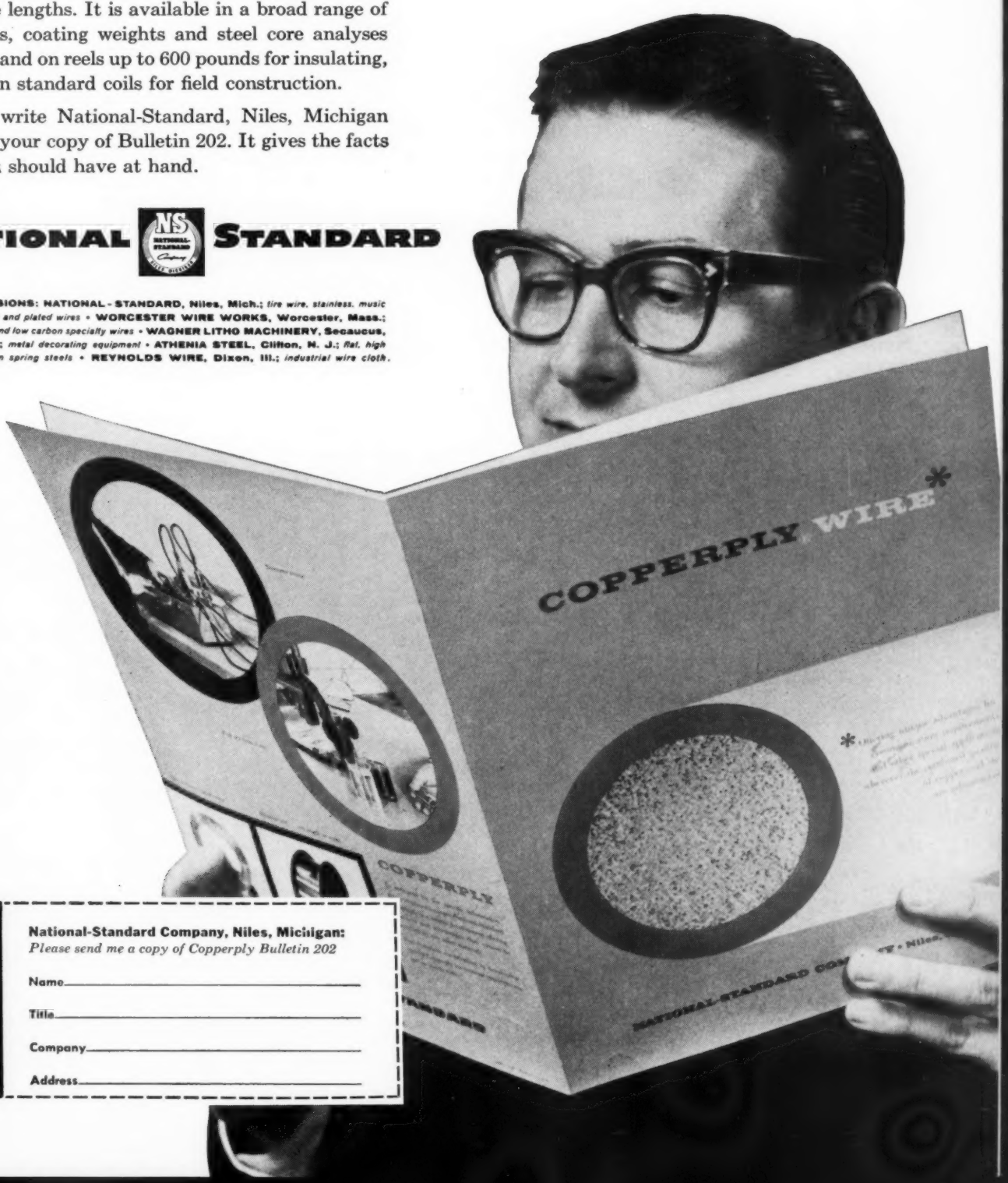
Bulletin 202 contains helpful engineering data and general information on the features, characteristics and use-advantages of unique Copperply wire.

And Copperply *is* unique with its electroplated copper coating, precise concentricity, and weld-free lengths. It is available in a broad range of sizes, coating weights and steel core analyses . . . and on reels up to 600 pounds for insulating, or in standard coils for field construction.

So write National-Standard, Niles, Michigan for your copy of Bulletin 202. It gives the facts you should have at hand.

NATIONAL STANDARD

DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; *tire wire, stainless, music spring and plated wires* • **WORCESTER WIRE WORKS, Worcester, Mass.;** *high and low carbon specialty wires* • **WAGNER LITHO MACHINERY, Secaucus, N. J.;** *metal decorating equipment* • **ATHENIA STEEL, Clifton, N. J.;** *flat, high carbon spring steels* • **REYNOLDS WIRE, Dixon, Ill.;** *industrial wire cloth.*



MAIL COUPON TODAY!

National-Standard Company, Niles, Michigan:
Please send me a copy of Copperply Bulletin 202

Name_____

Title_____

Company_____

Address_____

Prior to making her first subscriber contact, Miss Telephone Service visits the trouble desk to acquaint herself with the line cards. It is from these cards that her daily call list is prepared. Upon deciding on the area to be checked, a list of those subscribers in that area is made. This list is compiled on regular trouble report forms listing name, address, telephone number, type of service, type of equipment, and number of instruments. Each subscriber is listed on a separate form. Selection is made for the first subscriber contact, and Miss Telephone Service is ready for her first assignment.

The selected subscriber is called from the telephone office for the first appointment. Upon being answered, the representative identifies herself and requests the privilege of calling on the subscriber to inspect the telephone instrument. It is particularly stressed that she has nothing to sell.

If, perchance, the subscriber will not be at home or is not at home, a notation is made and filed for a future contact.

On keeping the appointment, Miss Telephone Service will visually inspect the drop for tree conditions or other apparent trouble. She then introduces herself at the door reminding the lady or gentleman of the house of her appointment. It is important on entering the house that she compliments the housewife on her home and if children are about on their appearance and behavior.

She inquires as to the location of telephone instruments and proceeds as follows:

(1) Cleans and polishes instrument.

(2) Checks line and handset cord.

(3) Checks dial and dial speed.

(4) Checks instrument and handset shell.

(5) Replaces number card if necessary.

(6) Makes reverting call to check ring in and line clearance.

(7) Checks for current directory.

(8) Inquiries as to any problems being encountered by subscriber in use of their service.

(9) Reports any special operating difficulty to proper department.

(10) Suggests additional service needs, such as extensions, bells, gongs, etc. Quotes the small additional cost of same.

(11) Lists work completed on trouble form to be returned to trouble desk for permanent record on line card.

(12) Calls next subscriber for appointment using same as a check call.

The completion of this subscriber call, together with others made each day, will make friends for the company. It helps to improve the quality of service and by the application of a preventative maintenance program saves many dollars in the instrument maintenance account.

Left to right, M. J. Hoeksema of Three Rivers, Mich.; L. F. Roberts of Washington, D. C., and B. B. Harder of Sumter, S. C.

I know you will be interested in the accomplishments of Miss Telephone Service. On Sept. 9, 1957, in the Lima exchange, she checked 20 instruments. The following maintenance was completed: She cleaned and polished 19 instruments. In addition, she replaced two rubber bases, one handset cord, one complete instrument, three dial number cards, one plunger, three saddles, one instrument shell, and adjusted two ringers.

During the 21 month period ending Aug. 31, 1957, 6,085 instruments were inspected in Lima. Six thousand six hundred and ninety-six different repairs, replacements, or adjustments were accomplished. In addition, dialing instructions were given to 24 elderly people and 247 directories were distributed. I would like to point out that all the 6,085 instruments checked were giving service, without complaint, at the time of inspection. All work accomplished was strictly preventative maintenance.

Many of these calls have a humorous side. For instance, one gentleman did not want an instrument shell replaced. His telephone was working, and he did not want to pay for a new one. One excited lady thought Miss Telephone Service wanted to kidnap her baby. A businessman, at sight of the uniform, asked her to leave as he did not want to be solicited for a gift to the telephone company. After being convinced that was not the purpose of the visit, he was highly pleased with her call and complimented the telephone company. We even had one request for a different type of service—baby sitting. Needless to say, we had to refuse.

In addition to the duties described, Miss Telephone Service may be used for commercial surveys, interviewing anticipated zoned subscribers, and customer complaint contacts.

It is impossible to measure in dollars and cents the actual value of the goodwill generated by this media of public relations. However, we have had many letters and oral compliments from both residential and business users. Also, it has been demonstrated to us during rate increase proceedings that those exchanges serviced by Miss Telephone Service seldom have service complaints. Subscribers, on a whole, are willing to accept the requested rate increase due to improved quality of service and this human contact they have had with the company.

Specifically considering the actual dollar savings with Miss Telephone Service, we have available figures that reveal that in the first full year of operation this project saved us approximately $10,000 in the instrument maintenance account. There were other financial gains traceable to this service, thus substantiating the statement, "Today's profits are yesterday's goodwill—ripened."

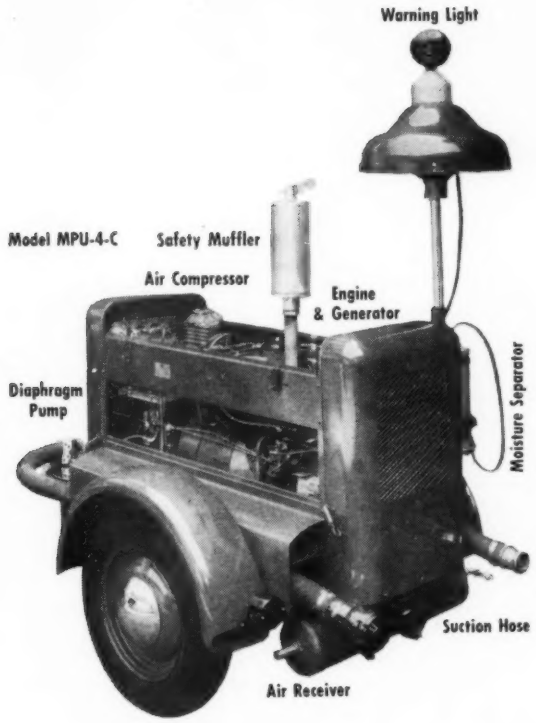
Linked to this savings is the improved quality of service rendered to the subscribers. A trouble free instrument is a necessity for good service.

There goes the service girl with a smile,
Who knows her work is well worthwhile.
She left the housewife full of glee,
Knowing her telephone was trouble free.

Experience has proven her worth. Operating companies, both small and large, can, through some type of a Miss Telephone Service, create better public relations in their communities. They can provide an improved quality of service, through preventative maintenance, at a lower cost. To you—we recommend Miss Telephone Service.

S&G designs for you

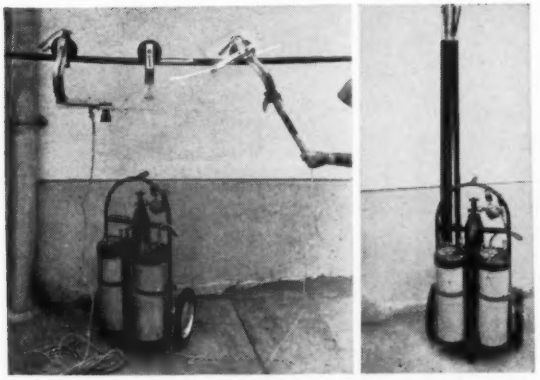
and your specific needs



MOBILE POWER UNIT

(Model MPU-4-C)

- Generator slow speed for quietness
- Pump—Diaphragm type to remove seepage and drain back
- Air Compressor—to put cables under pressure for cutovers or repairs
- Furnished with or without pump and compressor
- 300-Watt floodlight illuminates working area
- operates soldering pot and iron, electric and air tools
- electric blower to ventilate manhole
- supplies dry air for cable cutovers, flash testing, etc.
- diaphragm pump can be operated from manhole by push button control
- buzzer signal for summoning helper
- light, easy to handle



LEAK DETECTOR APPLICATOR

(Model LD-1 & LD-2)

Both models use highly successful chemical type leak detector. Applicator's dual nozzle sprays both sides of pressurized cable, giving 100% coverage. Bubble cluster forms around leak within minutes and can be clearly seen from the ground. Air pressure bottle in cart supplies regulated pressure in solution tank at all times, can be adjusted for different heights.

MODEL A

Air Compressor Dehydrator

Exchange equipment designed to supply chemically dry air for telephone cables, aerial and underground, this unit can supply as many as 30 cables. The unit is equipped with volume recording air meter, high and low pressure alarm switches, humidstat and hour meter.

- **Completely automatic in operation**
- **Air purifier to eliminate oil mist**
- **Incorporates the latest safety devices**

S & G MANUFACTURING CORPORATION
P. O. Box 1309 • New Orleans 10, La. • RAymond 3142

XUM

Report of USITA Traffic Committee

*By H. J. KLEINHAMMER**

Chairman

IT IS FITTING on this 60th birthday of our Independent telephone association, to contemplate its accomplishments and to extend our sincere wishes for the continued progress of its united members.

I would not try to review all the many achievements with which our Independent industry has been credited during the past 60 years; contributions to the science of telephony, constantly testing and proving advanced methods, unhampered by conventionality, but in conformance with necessary standards. These speak for themselves. But if I should be asked to name one outstanding achievement, I think I would choose integration. Yes, integration, but not consolidation. Out of the few hundred detached more or less isolated companies of 60 years ago has evolved an integrated system which includes the more than 60 million telephones, both Independent and Bell—A nationwide system wherein the 4,500 separate companies retain their individuality and competitive identity, yet are integrated into a common network with a common purpose, to provide a means whereby any two people in the country, even the world, may communicate with each other privately with the same speed and convenience as afforded on a local call.

You have heard this many times before, but why do I stress the point? Because I want us to visualize the responsibility shared by each company, large or small, for the service rendered by the whole system.

The idea of integration suggests the need for uniform methods and standards, more careful long-range planning, more universal concurrence on proposed requirements. While the small or large company shares the responsibility of conforming to national requirements, it deserves to share in the formulation of these standards. To this end, your United States Independent Telephone Association and its 50 or so committees and subcommittees afford a very practical means for the individual companies to share in the development of nationwide objectives.

Your Traffic Committee has been given the responsibility of "considering general problems pertaining to traffic and particularly the improvement and standardization of traffic operations of Independent companies." This committee held a meeting in Chicago in June of this year to discuss these propositions and to arrange this conference today.

We feel the importance of accepted standards, not only in traffic operating methods which have even now reached a high degree of uniformity, but in the provision of adequate facilities both within the central office and interoffice trunks.

The Traffic Committee stresses the need for having traffic service objectives for administrative use within the department such as speed of answer, per cent irregularities or errors, etc. Where traffic is spending, either directly or indirectly, one-half or more of a company's annual operating budget it is absolutely essential that the grade of service be controlled so as to be acceptable and attractive commercially, yet within the financial ability of the company.

We recognize the need for each company to find a means to measure and evaluate its own service in relation to its objectives and those of the network, and to control its operating cost.

Let us now consider briefly some of the current developments in toll operating methods. The new method of handling delayed tickets has gained widespread approval. Most companies have either eliminated, or limited voluntary subsequent attempts and thereby discontinued their ordinary "TX" positions. The success of this plan has been made possible largely through the good public relations job done by the commercial department and the public's acceptance. Companies using the new method report very favorably that, when given the choice, most customers now prefer to place a new call each time they wish to make a subsequent attempt rather than to have the operator initiate these attempts. It also has resulted in saving operating time. One word of caution, however. The whole idea is based on trying to make the procedure for placing toll calls comparable to local service, with the goal of Direct Distance Dialing (DDD) in mind. Where inadequate toll facilities cause a high percentage of calls to be released due to "NC," and the customer cannot make an attempt and receive a report while on the line, the entire program loses its effectiveness.

In connection with billing calls to a third station without verifying acceptance, there are wide-spread differences. Some companies do and others do not bill to a third station without verification. We would urge a uniform practice and generally favor verification. Along this line the method of handling toll credit card calls has been greatly simplified both from the operator's and customer's viewpoint.

The most recent change in operating practices is brought about by discontinuing the requirement for "flashing busy" on the toll network. This now

(Please turn to page 162)

*Mr. Kleinhammer is General Traffic Manager of Inter-Mountain Telephone Co., Bristol, Tenn.

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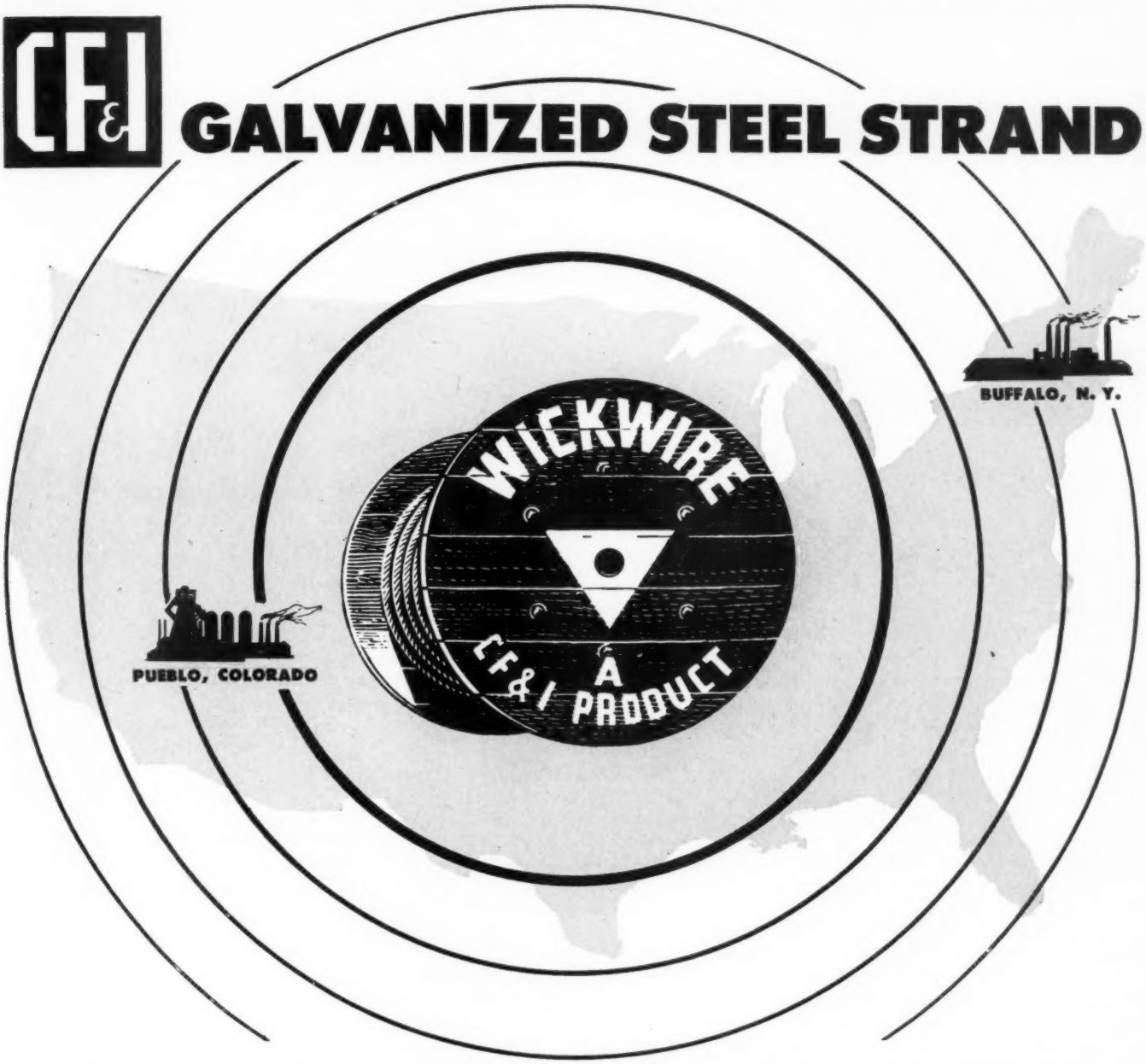

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Over Sixty in Traffic

*By L. W. CLEVELAND**

(A Traffic Conference Address)

"PULL OVER, Buddy, you're going over 60" brings a cold chill to the average motorist. With today's high-powered cars, on newly engineered super highways, driven with the force of gasolines with additive strength, we find ourselves traveling faster and faster and needing to make quicker driving decisions. These decisions must, of necessity, be made rapidly, taking into account direction, extenuating circumstances, and knowledge of our automobile. Experience, which we have gained in driving many miles before, is suddenly called upon to make these split-second decisions, so necessary to reach our scheduled destination.

In the Traffic Department, we are now going "over 60." It is well established by this time that the USITA is going beyond 60 in its efforts to steer the industry down that broad, but congested, super highway of prosperity. The year 1960 has somehow been used by many telephone companies, both Independent and Bell, as a significant target date for many of their Direct Distance Dialing (DDD) plans. 1960, being a short three years away and with the association now facing its 61st birthday, we can well imagine ourselves as being in a position of automobile drivers facing traffic problems that are inherent in traveling "over 60."

Our association president has indicated before the Pennsylvania Independent Telephone Association that, although he professed no prophet powers, he would venture to predict that the Independent telephone industry will be around for another 60 years at least. With this assurance from Mr. Power, I believe we can proceed to discuss the role traffic will or should play in these next 60 plus years.

Perhaps to plot direction of a projected route, we should establish as many points of reference as possible in order to make our course straight and true. It is difficult to project the future beyond the present, unless we have past progress and experience to guide us. During the past 60 years, which have coincided with the age of our association, the traffic phase of the industry has changed as much if not more than any of the other operating departments. At the turn of the century when our association was in its infancy, the Traffic Department was somewhat helter-skelter and was still trying to make up its collective mind whether or not to employ boys or girls as operators! From this time to the period dominated by the Kingsbury commitment, the history of the Traffic Department was not too well documented. This was the time when Bell interests and the myriad of Independent telephone companies were skirmishing over franchise and right-of-way problems which resulted in a morass of non-integrated long distance and local telephone circuits.

After the Kingsbury commitment and, after the invention of the vacuum tube by Dr. De Forest, there were very significant landmarks in local as well as long distance development. Local problems were well-defined. But the mechanical switch had already been developed from its basic patent to a point that its use was accepted as the solution to the local switching problem. The development to 100 per cent mechanical switching has not yet been achieved, but it is now evident within the foreseeable future.

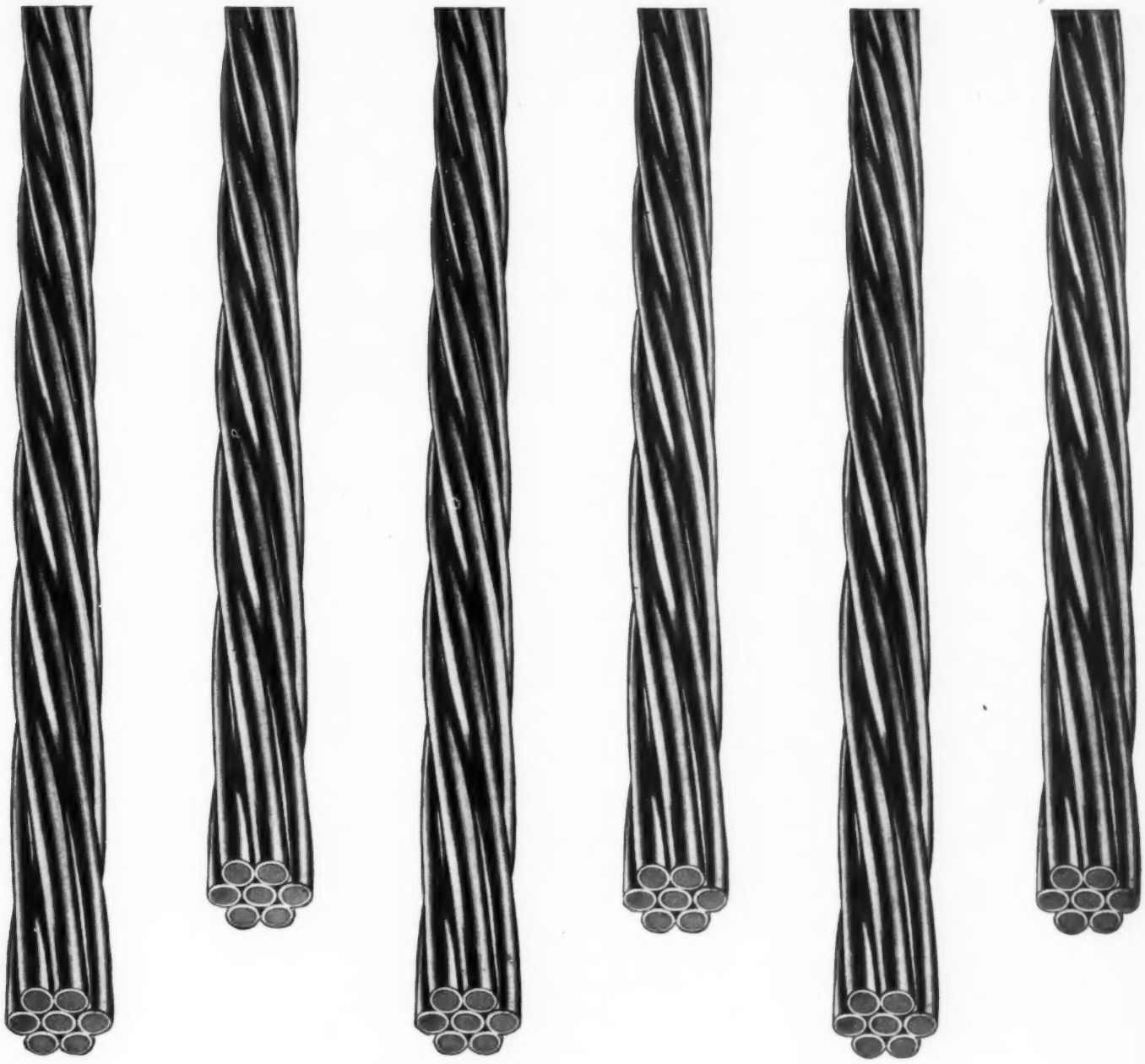
The long distance facet of the business has been another problem. From that day in January of 1915, when President Wilson and Alexander Bell talked from ocean to ocean with C. C. Moore of the Panama Exposition, long distance development has been sensational.

With the advent of the first transcontinental telephone call, the industry made steady, and at times, fantastic progress in the art of transmitting speech by wire over long distances. During those years, as in present times, the public responded to improved and faster service with much more demand for service. Technically, the art of telephony was speeding forward so traffic practices had to keep pace.

Prior to 1920, inter-company relations had not reached the high degree that is so evident today in this anniversary celebration. Toll circuits were expensive, scarce and their usage was jealousy sought after among the telephone companies. Those were the days of the in, out, and through tickets. Imagine how chaotic our traffic operating procedures would be today had the practice prevailed of accountability for each message from its originating to its terminating point. It was, indeed, an outstanding advancement in traffic results when they initiated during the 1920's the practice of CLR operation.

It was during the late 1920's that transoceanic telephone conversations were offered to the telephone-using public and this new and exciting innovation brought on still more problems for the Traffic Department to solve. At first, it seemed like this newcomer would bring back in vogue the use of the old repeating booths, which had become rather obsolete in most traffic operating rooms by that time. Transmission levels were poor by today's standards of high gain under water repeater circuits. It was not until 1940,

*Mr. Cleveland is General Traffic Superintendent of the Lincoln (Neb.) Telephone Co.



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that operator toll dialing, as we know it today, was born. Its development was somewhat delayed for the more important but deadly business of World War II.

After the war, operator toll dialing captured the imagination of the industry and the public and developed with such swiftness that it is estimated two out of three long distance calls today are dialed in their completion. Operator toll dialing has opened new horizons in our journey forward. Traffic people have found it necessary to streamline practices far beyond anything they had heretofore contrived or conceived as possible. They found that by initiating plans, such as the Oregon Plan and the Call-by-Number Plan, they could ask for and receive splendid assistance from the telephone-using public.

It is now well established in our minds that our customer is an intelligent, farsighted individual who will cooperate and participate in any plan or procedure which will, in its final conclusion, speed up his completed call. Today, he is by precept and experience furnishing us with called telephone numbers in more than 80 per cent of his long distance calls. He has learned to report WH to distant operators with a precision that is truly phenomenal and now today in many of our exchanges, we are calling upon this same customer to dial his own long distance calls direct to cities thousands of miles apart.

Yes, traffic-wise we have come a long way in the period spanned by the USITA. We have overcome inter-company restrictions to operator availability and to circuit inadequacies. We have made available to operators and dialing customers equipment that does not show on our own company financial reports. We have just this month put transoceanic circuits and Hawaiian subsets at the dialing finger of thousands of operators in cities throughout the U.S. and Canada. Yes, we have not only come a long way, but we are "going over 60."

Left to right, L. A. Gritten of Everett, Wash.; D. A. Kafka of Tampa, Fla., and John Beckley of Chicago, Ill.

Some of the newer automobiles have a feature that sounds an alarm when the driver goes too fast. I do not presume we are going too fast in telephone development, but perhaps we should heed some signals which may be flashing to us at this time. I should like to enumerate a few of the signals which are now flashing.

Present plant expansion within the industry requirements equated into dollars is becoming a staggering figure. Each of these dollars is expected to return its fair share of profit. Many of the dollars are being invested in equipment that will replace human labor. We have hundreds of circuits where tens of circuits were in place yesteryear. It becomes all too obvious that responsibility for line load and switch load has not decreased but, because of the inherent mechanization of these features, they have increased many fold.

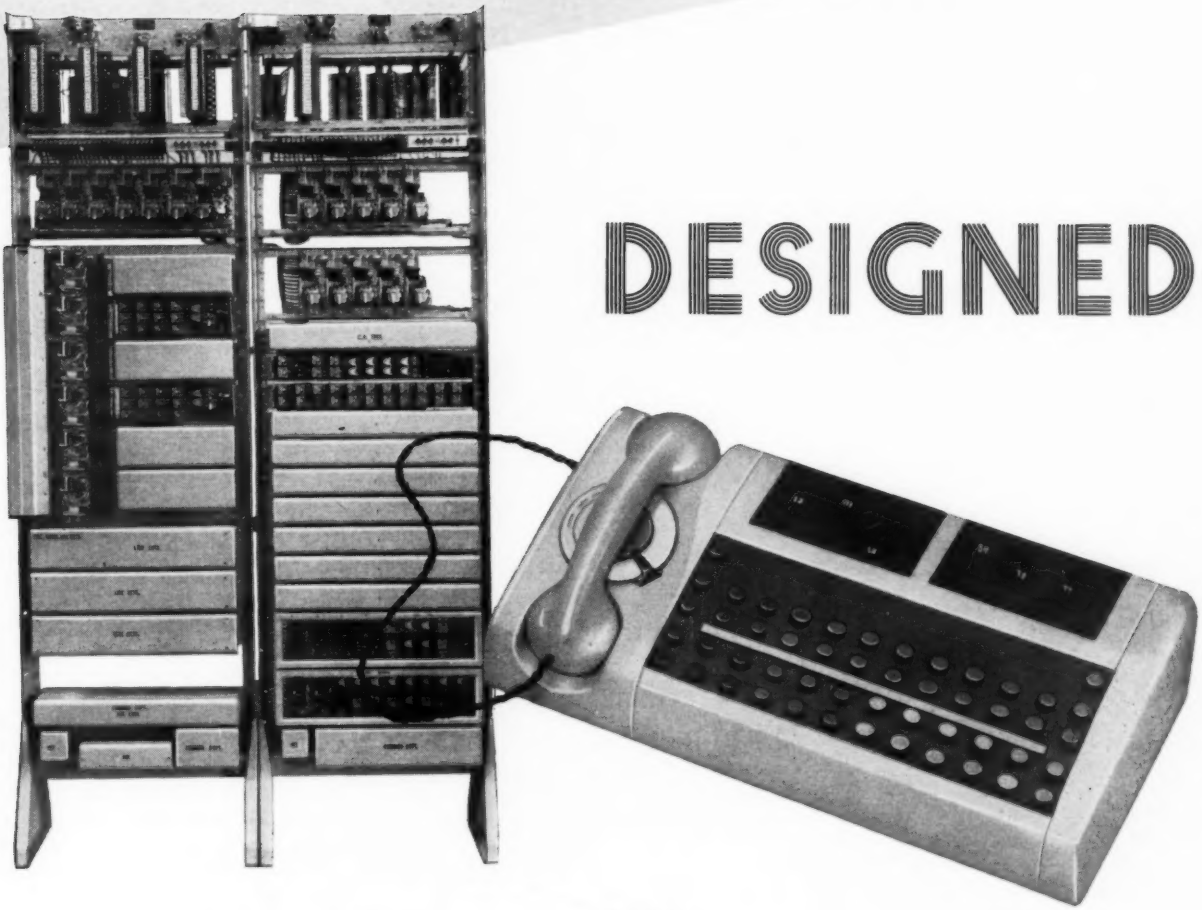
We have learned quickly that dial equipment is not magic, it cannot think. It can do only those things for which it was planned. Previously, under unusual load conditions, either by force readjustment or overlapping, the traffic people could make up certain deficiencies. With dial equipment loads *must* be studied, watched and equipment be guided. This presents more problems for the traffic engineers. It is mandatory that calling rates, circuit holding times, dialing irregularities all be made available to the engineers within time intervals we have never before considered necessary or possible. Observations for service evaluation, as well as Tone of Service *must* be stressed even more than in the past.

The design of traffic results equipment is struggling to keep pace with this speed of automation development. In the main, we are, today, using traffic results methods which we have used during the past years just mentioned. These results methods have been found somewhat wanting during the more recent years of operator toll dialing. The lag interval between the study period and the availability of the results has made it necessary to extend traffic forecasts based upon questionable premises.

Bernard M. Baruch is credited with the statement that "Every man has a right to his own opinion, but no man has a right to be wrong in his facts." This is indeed most pertinent to our traffic engineers, who, today, are making estimates of traffic loads resulting in millions of dollars of capital plant, which, after it is installed, must operate adequately and efficiently. If we are to continue to offer the calling public advanced service at reasonable rates, the information available to our traffic engineers must be valid. There are promising signs given us from various equipment manufacturers that better traffic results registering equipment will be available to us in the future. It is unfortunate that such equipment is not now at work to further guide our engineers in carrying out their responsibilities.

We have referred in this discussion to speed, measured in miles per hour. The basic unit "one mile" was evaluated by the ancient Romans as 1,000 paces. No doubt the rate of travel in those ancient times made it easy to measure the mile by those minute units.

Left to right, Miss Josephine Poppleton of Tampa, Fla.; Stewart R. H. Mitchell of New York City; J. B. Haley of Austin, Tex., and Courtney S. Snyder of Washington, D. C.



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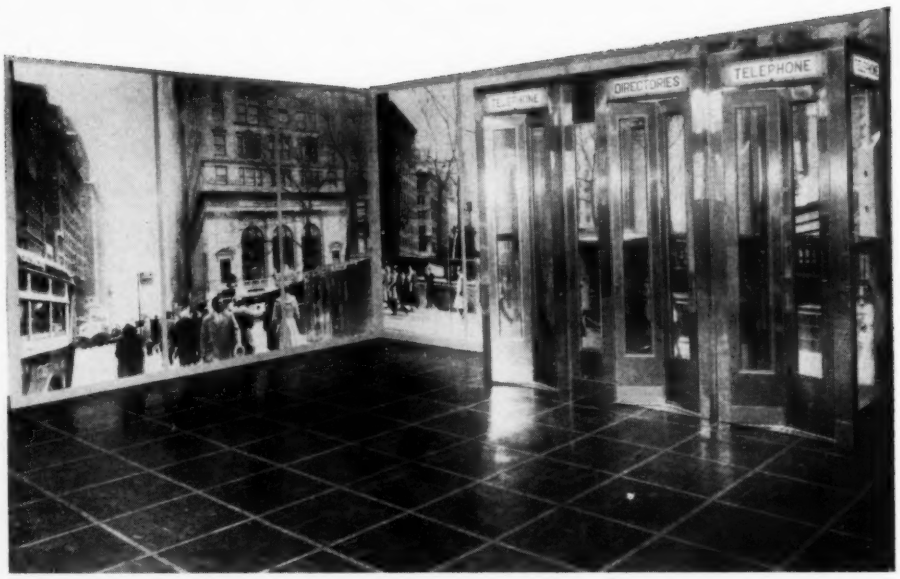
Modern times and its accelerated rate of travel have put the unit mile in a relative category to the pace of the ancient Roman. Although today's rate of speed is estimated to be hundreds of times faster than those of ancient times, we must still cling to the same basic unit of measure. Because of distances traversed in periods of time that are astonishing, it has been necessary to redevelop the art of navigation. Today's pilots in supersonic aircraft would be lost if they had to depend on methods of navigation that were considered adequate during World War II. Within our own industry, we are leasing private facilities to other industries for the rapid transmission of factual intelligence, such as telemetering, rapid data transmission, and perhaps by this time we well may be transmitting weather information from artificial moons to the earth's surface. I, for one, can see no good reason why traffic load conditions cannot be transmitted and interpreted to a central point within any given telephone system and have the information available to interested parties immediately.

Dial observation equipment should be available to our traffic people to evaluate subscriber use of the equipment. In the past with operator toll dialing, the efficiency of our use of the dials or key sets has been quite readily observed and if found inadequate we had control of those persons operating the dials or key sets. With the advent of DDD, we passed to our subscribers the control of equipment in offices throughout the country. Surely this should not be done without suitable and adequate equipment and procedures to determine the efficiency with which they are dialing this equipment. If and when there is a determination that subscribers are not using equipment to reasonable optimums, then it will be necessary to establish adequate customer education procedures.

Some companies are already busy at work setting up traffic sections to handle some of these problems. A new personality is entering our traffic family in the form of dial chief operators. It is the responsibility of these individuals, with their staffs, to balance loads within switching systems. Proper assignment of lines and main stations in an automatic office on a day-to-day routine basis is of prime importance for economy and service. Many of our present telephone companies are not getting the best use of their automatic central office equipment because they do not employ line and terminal assignment practices so essential to maintain an even distribution of traffic during each busy period of the day. Good load balance will make it possible for subscribers to obtain the grade of service for which the exchange is designed to provide. The responsibility of these dial chief operators is extensive and requires personnel, which are, generally speaking, not available to us in adequate numbers today.



ON THE SIDEWALKS OF NEW YORK. Among the many changes in "the face of New York City," is the installation of telephone booths at busy locations, depicted by the above pictured display. One installation is composed of a battery of seven stainless steel booths near the New York Public Library at the corner of 42nd Street and Fifth Avenue in Manhattan, providing the public with 24-hour service and the telephone company with extra revenue. Notice that the booths at each end contain telephones while the center one shelters directories. There are 23 more such booths—in groups of two and five—located on the busy sidewalks that form the perimeter of Bryant Park, near the library.

"Going beyond 60" in traffic when all of our exchanges are dial operated and our long distance is operating on a Direct Distance Dial basis, one might conjecture that the traffic operator is doomed by all this automation. This is not true, and it is my firm conviction that future traffic personnel will increase in numbers and in quality. The projection of population growth beyond 1960, presages fantastic message loads. A foreseeable 200 million population in this country, with an ever increasing inclination to communicate with one another, presents a veiled threat that if we do not accomplish our conversion program in the near future the traffic departments throughout the country will be swamped.

In this connection, the various statistical agencies have presented a paradox in population development. It is generally accepted that in spite of tremendous population gains, the requirements our labor force brought about by the ever increasing gross national product will make available to us a smaller percentage of employable persons than we now have. This means we will be dealing in a much more active market for our operating personnel than perhaps any we have heretofore experienced.

If tomorrow's requirements for operators is contingent upon these assumptions, we may well be in the same situation toll-wise in which we found ourselves in the early 1920's. How many operators will be needed? This will be a burning question for some time to come, but it is evident that DDD operation will not eliminate the telephone operator, but will perhaps cause her numbers to increase. At this time, the dialability of toll traffic varies so widely from one section of the country to another and from one exchange to another there is no way in which one can generalize about immediate toll operator requirements.

Whatever the number of operators, we know they will be rearranged as to geographical location. Smaller toll centers will tend to disappear leaving the larger ones to handle the toll and dial assistance for their tributaries. Those of you in attendance can project the training problems this will generate. Not only will it be necessary to maintain complete and accurate directory assistance bulletins, it also will be necessary to train our operators more thoroughly in traffic and even commercial problems and techniques. We are aware of the indirect public relationships we have experienced with CDO conversion programs; now we will extend these to larger communities which have enjoyed toll center conveniences.

The applicant who may be operating our switchboards tomorrow must be

(Please turn to page 162)

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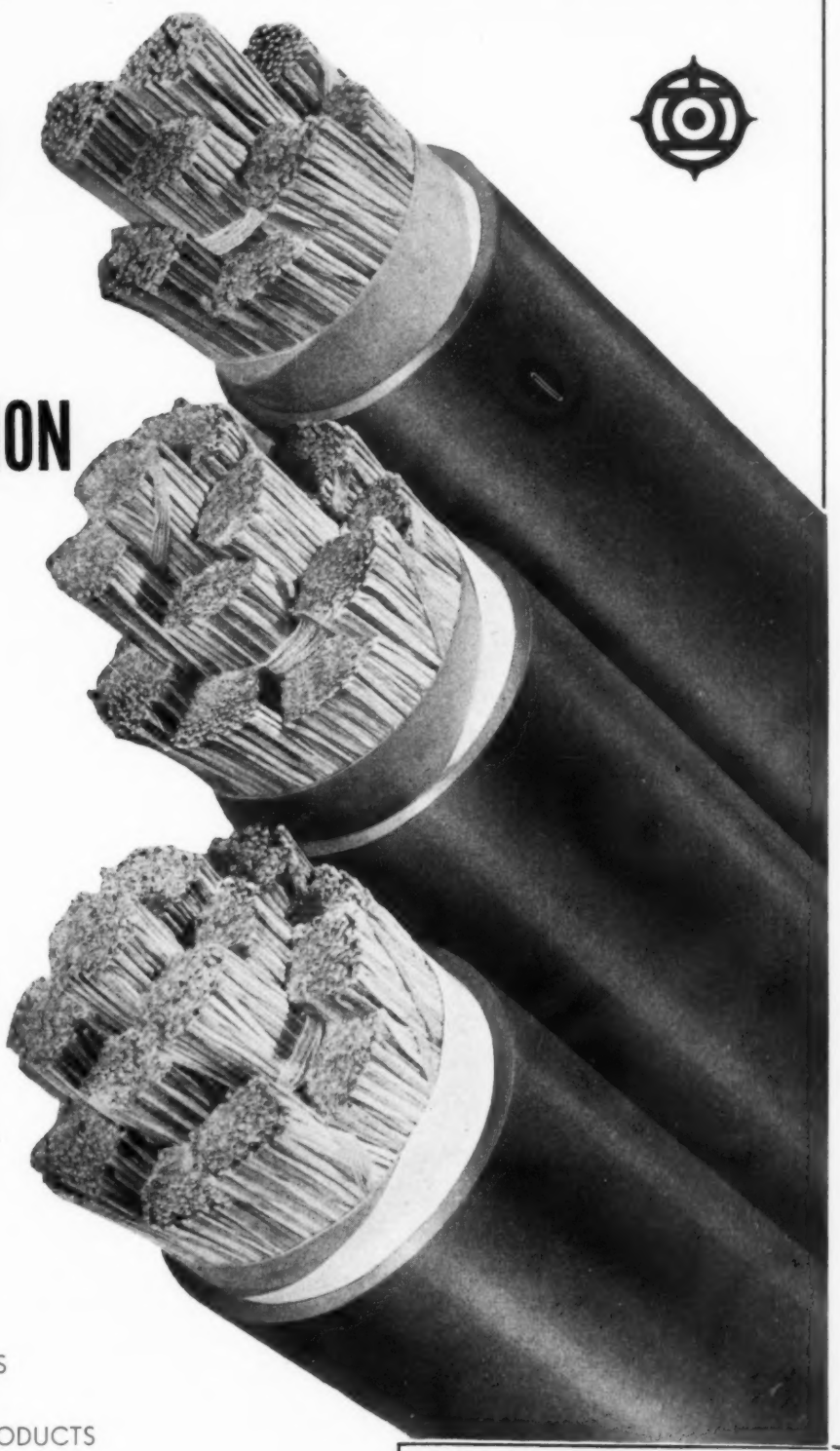

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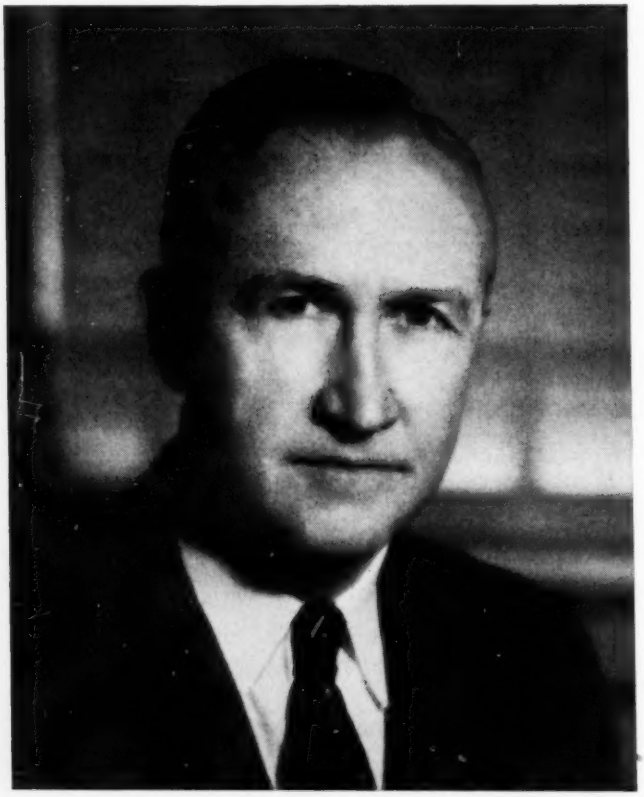
USITA...a

A 60th Anniversary Message fr

President, International Telephone a



Heartiest congratulations, USITA, on reaching three-score years of outstanding service to the members of your organization and to the public. I do not know of any association that has more right to be proud of its history, traditions, and accomplishments.

When you first organized in June, 1897, your membership represented about three hundred companies. Today, 4,400 Independents make it possible for the millions of people living in two-thirds of the area of our country to converse with each other and with the millions living in the remaining one-third. This simple fact, in my opinion, tells the story of your own great progress and the vital part played by the communication facilities of your members in America's business and industrial growth.

.and IT&T

e from Edmond H. Leavey,

e and Telegraph Corporation

The 60th Anniversary of your organization, coincidentally, marks a 60th Anniversary for the telephone people of International Telephone and Telegraph Corporation. In 1897—two months before the birth of USITA—Milo G. Kellogg founded the Kellogg Switchboard and Supply Company, a primary source of equipment for the Independent industry, and now a major manufacturing division of IT&T.

USITA's roots and Kellogg's roots, therefore, are equally deep in Independent telephony. For the past six decades they have grown up together in a fine spirit of cooperation . . . contributing their best efforts to solidifying the industry's position of leadership.

When we have viewed a given segment of the past it is natural to ask ourselves: What will things be like in a similar forthcoming period of time?

The future, of course, remains to be seen. But if the far-reaching research and development projects under way in IT&T laboratories, and the prototypes now being engineered and built are any indication of *tomorrow's* telephony, then the members of USITA may confidently look forward to increasing opportunities for easier expansion, greater efficiency, lower-cost maintenance, and more profitable system operation.

Congratulations again, USITA, on your sixty-year record of advancing the unity, welfare, and progress of the American people . . . through modern, dependable telephone communications.

IT&T

INTERNATIONAL TEL and TEL

INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, 67 Broad Street, New York 4, N. Y.

XUM

Are Telephone Operators Human?

*By ALLAN R. STACEY**

(A Traffic Conference Address)

THE ONLY way Robinson Crusoe could communicate with his friends was to put a message in a bottle ("Dear Folks: The weather is awful. The roof leaks. Wish you were here") and throw it in the ocean. Then, if the tides were right, in about three years he'd get his bottle back, containing the message his cousin Emma was down with the quinsy.

The American Indian had another method of communication. He sent up smoke signals. His trouble was he hadn't any matches. He just rubbed sticks together. This was a slow business, especially in the rainy season. Usually he gave up and went off spreading rumors on horseback.

After the smoke craze died out, the telegram was invented. It worked fine, until one day a gentleman in California proposed by telegram to a girl in Iowa. After three hour's wait, he got an answer: "I can't marry you. Am going to Florida to marry Archie because he proposed by telephone!"

After that everybody started using the telephone and so dawned a new era in communications. The telephone company became the "nerve center" of the community and it follows that the "nerve center" of the telephone company itself is the Traffic Department. Here is the very core of our communications system. While we are striving every day for further mechanization we are astonished to realize that we now have more telephone operators than we have ever had in the history of the business. Sometimes we become so busy handling the communications of our customers that we forget the very necessary job of communicating within ourselves by letting our operators know what we in management expect of them in the traffic department. All right, how *do* we communicate with our operators?

The Chief Operator

The chief operator is the "line of communication" between the Traffic Department and management and should always be alert to keep the operators informed on current activities of the company. The chief operator should, to a great extent, use her own initiative in keeping her operators informed and should not depend entirely upon management or department heads to furnish the necessary information. She should also have contact with the heads of the various departments within our medium sized companies in order to be fully informed herself.

May I suggest two things: (1) In small or medium-sized companies it is a good idea for the chief operators to have five or 10 minutes daily in conference with management if only for the reason of telling management that everything is going along fine and to learn of the latest events; (2) in small and medium-size companies it is wise to have regular supervisory meetings once each week or once each month as might be appropriate in order to inform all supervisors of what the current events are in the company. The chief operator should draw from this in order to know what to pass along to her department.

The Newly Hired Employe

Naturally, the newly hired employe should be fully informed about employe privileges. In our company, we use a bulletin for this purpose, a copy of which is handed to each new person joining our organization. At the time of hiring the chief operator, or some other appropriate person, should tell the new individual exactly what is expected of her as an employe. At this time new employes should be made to feel a definite part of the organization and it should be pointed out that our company would not be able to function without the very necessary operation that the switchboard girl performs. As you and I know so well, every individual must feel needed in order to perform at her best. Therefore, we have found it advisable to explain to each new operator just how indispensable she is in the communications business conducted by our company.

May I further suggest three things for your consideration:

(1) Each new employe should be given a brief history of the company in order that she may understand the privilege it is to be a member of the Independent industry and a part of the telephone company which means so much to this community.

(2) Each individual should, if practical, be given a tour of the premises in which she will work. This should include the business office and the plant department facilities including the switchroom if these are accessible from the traffic operation location.

(3) In our company, it is the practice to put all new female employes in the traffic department for a period of at least two weeks even though they might be hired for work in the business office or in the billing department. The purpose of this is to have each girl realize the importance of the traffic operating department and know what a traffic operator really does. I might suggest that we could carry this even further and where practical put the new applicant for traffic operating work into the business office for a short period of time and perhaps in the billing department in order that she may feel a part of the company at large.

Bulletins and Practices

I know that you are all following the

*Mr. Stacey is Vice President and Manager of Sunland-Tujunga Telephone Co., Sunland, Cal.

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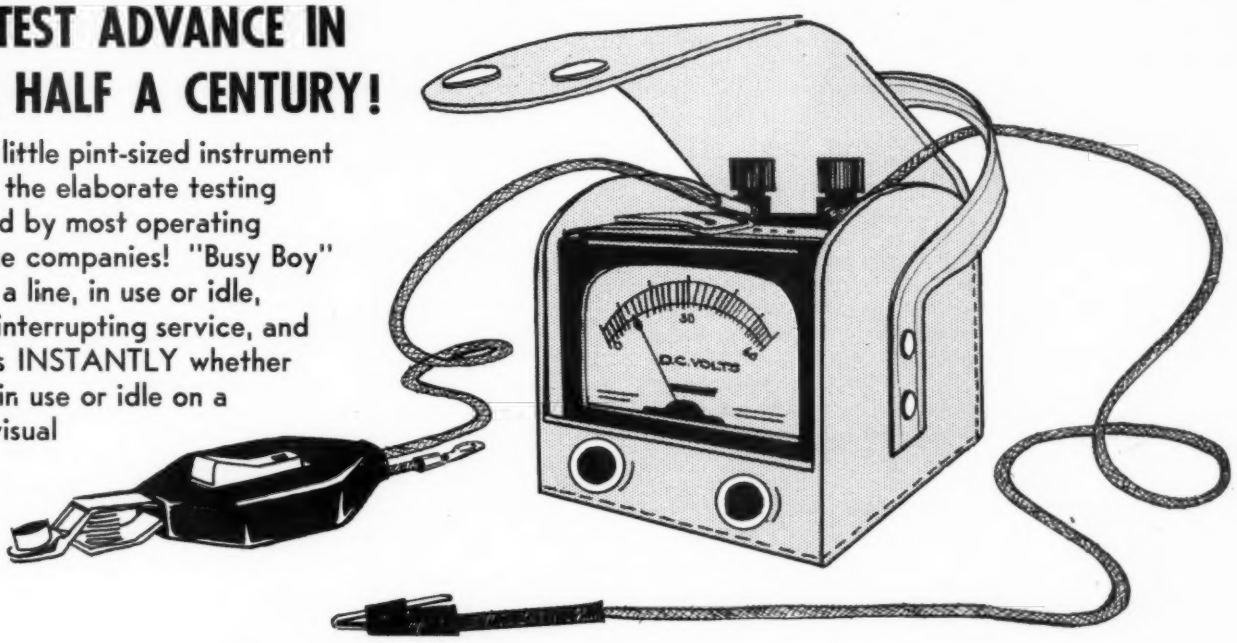

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UNAVOIDABLE SERVICE INTERRUPTION	ABSOLUTELY NO SERVICE INTERRUPTION!
EVERY OPERATION DOUBTFUL	EVERY TEST POSITIVE!
IT TAKES "TIME" TO HEAR	INSTANTANEOUS!
FREQUENT BATTERY FAILURE	NO MAINTENANCE!
DEPENDENT ON OTHER EQUIPMENT	COMPLETELY INDEPENDENT!
IRKSOME WAITING PERIOD	NO WAITING PERIOD!
DISCOMFORT OF HEAD SET	NO HEAD SET!
LONG TRAINING PERIOD	LITTLE TRAINING NEEDED!

- "Busy Boy" saves dollars in time and equipment!
- "Busy Boy" reduces book work on complaints!
- "Busy Boy" eliminates service interruptions!
- No guesswork or reverses with "Busy Boy"!

"Busy Boy" is revolutionary in the field of communications! The whole operation is accomplished electrically . . . completely simplifying a job formerly required bulky equipment and head office testing.

BUSY-BOY

INQUIRIES INVITED

write PETLIN CORP., Manufacturers of telephone testing equipment

P.O. Box 125, ROSEMEAD, CALIFORNIA

XUM

usual bulletin and training procedures but I should like to suggest emphasis upon the following additional points:

(1) Each traffic operator involved in company PBX work should be fully trained communicationwise in order that the very best impression is made upon the public calling into the telephone company office. This would include knowing the names of personnel within the organization, what their jobs are, and being able in an instant to recognize to whom she should route each call when the calling party himself does not know.

(2) This should also include knowing when key personnel are out of town, home ill or on vacation.

(3) Particular emphasis needs to be given to bulletins and practices which inform the operator as to what is happening within the company. A good employe is one who is interested in all phases of the telephone company and a good employe will want to know about things that affect her personally well in advance of reading these items in the local newspaper or learning from other outside sources.

(4) In our company, we believe our operators should have a broad education as well as a specific one. For this reason we have borrowed training films from the nearby Bell System company and in addition have borrowed films of a broader impact describing the aspects of telephone service and communications. We believe that this has helped the operator to more fully understand her function and to feel proud of the job that she is doing.

High Standards

Ten years ago in our telephone company there were three requisites for any girl who wished to become an operator. First, she had to be tall. Second, she had to be warm blooded. Third, she had to be able to withstand occasional bursts of profanity. These were the yardsticks we used when we interviewed a new girl for the traffic department.

Our new girl had to be tall in order to reach the extra and additional multiple that we had placed upon the top of our switchboard as the board became overloaded.

The girl had to be warm-blooded in order to withstand the cold breeze that came from our cooling system which consisted of wash tubs with blocks of ice in them and fans behind the blocks to blow cold air upon the switchboard.

The girl had to be able to withstand profanity because the switchboard room was located immediately over a downstairs plant department room used for frame and repair and the two rooms were connected by an air duct. When the fellows downstairs got a little too much out of line in the languge they were using, the office manager used to drop a bar of soap down this air duct as a gentle hint. Occasionally, it was even necessary to drop an entire box of soap for the boys to use in washing out their mouths.

Today, instead of the tall, warm-blooded, worldly young lady for the Traffic Department our company looks for a top quality person who will fit anywhere in the organization. We expect first grade performance from this young lady and we set our standards high for her. For example, we provide the best possible surroundings for her to work in. We see that the walls in her room are painted frequently, that the lighting is proper, that she has first class equipment with which to work and that it is properly maintained and that she herself is expected to live up to the quality of her surroundings. For example, in our company we encourage our traffic operators to dress the way girls do who are service representatives in our business office. In fact, as these girls pass my office going down the hall to the switchboard room I cannot tell from their attire which department they will be in. In summary, communicate high standards to your traffic people.

Meat of the Cocoanut

I could talk all day about techniques of communication within the Traffic Department and it would be to no avail unless you, the people sitting in this room, decided to do something about it. You are management. You must take a personal interest in this problem. You know, there is no such thing as a poor operator; there is only a poor supervisor. You realize, I am sure, that any organization is but the lengthened shadow of one individual: Your Traffic Department is but the lengthened shadow of your efforts as supervisor.

You, personally, yourself, the person sitting on the chair that you occupy in this room must do something about this communication to your operators. Unless you do, all speeches given at conventions, all the articles written in the trade press, all the bulletins hung on the bulletin boards will not accomplish true communication.

You say, "All right, what do I do to improve my communications?"

Our company was faced with the problem of encouraging supervisors to develop themselves and we drew upon the resources of an organization in New London, Conn., known as Vision, Inc. For a stipulated fee, this organization supplies training material which helps us to teach supervisors to communicate with people. This training material recognizes that 12 per cent of a supervisor's success depends upon his technical skill, but 88 per cent depends upon his ability to communicate with people. From this Vision material we have learned six communication devices and they are:

(1) It ain't what you do, it's the way how you do it.

(2) When dishing out criticism, use a small dish.

(3) To persuade, become a teacher.

(4) Become an extrovert.

(5) Campaign promises are for the birds.

(6) Little pitchers with big ears.

It Ain't What You Do, It's the Way How You Do It. When you go back to your home Traffic Department take a long look at yourself as a supervisor. Maybe you need refurbishing. How is the vocabulary you are using in communication? Is it the same one you have been using for 15 years?

You've heard about the forgetful patient who went to the doctor and the doctor wrote a prescription in his usual illegible handwriting. The patient put his prescription in his card case and forgot to get it filled. Every morning for two years he showed it to the conductor as a railroad pass. Twice it got him into Radio Music Hall; once into Ebbets Field to see the Dodgers. He got a raise from the cashier by showing it as a note from the boss. One day he mislaid it at home; his daughter picked it up, played it on the piano and won a scholarship to a conservatory of music.

Is your vocabulary in this confused communication type? Bob Hope would be a flop as an actor if he could not project his personality over the footlights to his audience. So it is with you. If you can't put over your ideas, desires and objectives you are not going to lift your traffic department into doing the biggest, best and most colossal job that it has ever done.

Let me illustrate. Notice the difference of impact in the following two sentences:

(1) She was a dangerous woman whose fingers reached out for a good man.

(2) She was a doublecrossing siren whose claws ensnared a god-like saint.

You, Mr. and Mrs. Supervisor, may need a new vocabulary for our new day.

When Dishing Out Criticism, Use a Small Dish. Naturally, the best way to dish out criticism is in a very small dish. However, there will be times when a large platter full will be necessary. In communicating with your operators, have you ever tried the sandwich technique of criticism?

To make a ham sandwich, for example, you butter slices of bread and put the meat between them.

Same with criticism. Here's an example in the Traffic Department.

Tillie decided that the pencils provided in the Traffic Department handicapped her writing speed and, therefore, she brought in a ballpoint pen but the result was that she spoiled more tickets by making them illegible.

Her supervisor said: "Tillie, I've been looking over your ticket volume for the past few weeks" (this is the bread).

"You certainly have improved since you came to our company" (this is the butter).

"But your ticket illegibility is entirely too high. That ballpoint pen you've been using is responsible so I guess you'll have to stop using it" (this is the meat).

"It certainly looked like a smart idea and it showed you were thinking about your job" (this is more butter).

"See if you can't figure out some other way to increase your speed, will you? Maybe you'll hit the jackpot on the next idea" (this is more bread).

This kind of sandwich is very palatable, especially if you use a high grade of butter, and the bread is not stale.

To Persuade Become a Teacher. To persuade your department to do its most effective job you must teach your operators. You do this by telling them orally, or in writing, by showing them with examples or demonstration, and by checking for the correctness of their work.

Now, it is true that there is more to persuasion than just teaching but I point out to you that if the teaching is absent the persuasion is very weak.

Become an Extrovert. Extrovert folks turn outward in thought and deed. An introvert will say, "Who will help me?" and an extrovert will say, "Whom can I help?"

Put extrovert thoughts to work in your department to find out whom you can help.

How do you become an extrovert? It's easy—you just act at every turn the way you would if you were truly an extrovert. This means taking a personal interest in every member of your department.

Try using praise. Many a traffic man fusses with some new tool which might yield a 5 per cent production increase and ignores a tool of recognition—praise—which might yield 50 per cent.

Campaign Promises Are for the Birds. Some people promise 10 times as much as they can possibly deliver and then deliver the "10th part of what they promised." It then comes time for performance and they are among the missing.

What are you promising people that you can't, or won't, deliver? As a supervisor the tribute coming back to you should be "If he says he'll do it, it's as good as done." Take no promise lightly.

Little Pitchers With Big Ears. The big bore is a person of small calibre who insists upon talking about himself when you want to talk about yourself. He lacks the power of conversation, although not the power of speech. If you want to be a first class supervisor, listen. If you don't want to be classed as a bore, listen. Get your employes at appropriate times to talk about themselves so that you may know them better. If you will turn into a "listening post" you will become a "guidepost" rather than a "hitching post."

Conclusion

May I summarize the most important things that I have said:

(1) Improve yourself. It ain't what you do, it's the way how you do it.

(2) Watch that criticism—use a small dish and a big sandwich.

(3 Become a teacher with strong persuasion.

(4) Become an extrovert and say "Whom can I help" rather than "Who will help me."

(5) Remember that campaign promises are for the birds.

(6) Listen and see how much you can learn.

The title of this talk was "Are Telephone Operators Human?" I believe they are. It is now up to you to prove it by going home and using these communication devices we have been discussing. Good luck to you. May every one of your operators turn out to be a "living doll."

ENGINEERING EDUCATION

Concluded from page 64

This shift in emphasis is also going to throw a burden on certain employers who have not accepted this modern concept of engineering education. That is, the universities are no longer preparing a man to hold a job upon graduation, but they are preparing a man to hold a very good job 20 years after graduation. There are still many industries who expect to hire a young man and immediately have him able to undertake work which will show a profit to the company. If any industry expects this, they should hire a technician, not an engineer. Fortunately, the number of such companies is not great, and the number of engineers which they annually employ is even smaller.

I reiterate that the job of education of the young engineer is a partnership between the universities and the engineering employers, in which the university undertakes the teaching of the fundamental science; the employer, with whatever university aid can be supplied, undertakes the education of the young engineer in the art of profession. This, to me, seems the way to the engineer for the future, with the high-level mathematical and scientific tools to solve the problems of the coming age of *Computers, Control,* and *Communication.*

MERCHANDISING PANEL

Concluded from page 84

We teach our people that they are now ready to present a *packaged price quotation.*

Training gives pride to the employe. He is proud to sell, to have something worthwhile to sell, and to be a real representative of the telephone company. It gives initiative which would otherwise not develop, except for training.

With the very limited time available, I have been able to only mention in a general way a small part of the elements of a training program. There are doubtless many merchandising training programs which are superior to ours. We do not feel that it is imperative that we have the perfect program. What to us seems important is that we have a continuing merchandising training program for all our employes.

RURAL DISTRIBUTION WIRE

Concluded from page 106

ance and inspection should be carried out. At places where abrasion cannot be prevented, plastic cable guards should be placed around the RDW.

Rural distribution wire has a definite place in the telephone industry. Good maintenance of this wire is necessary for good service, and service is what our industry has to sell.

Oversubscribe $3,000,000 Canadian Bond Issue

An issue of 6 per cent 20-year Quebec-Telephone (Rimouski, Que.) general mortgage bonds amounting to 3 million dollars, was oversubscribed, it was reported on Oct. 12.

Offering was made by Greenshields & Co. and Credit Interprovincial at 98½ to yield 6.13 per cent.

Bonds are non-redeemable for 15 years, and bear 25 warrants per $1,000 to buy stock at $20 a share for five years.

XUM

How far is 20 miles?

by John Voss

There was a great German philosopher a couple of hundred years ago—Kant was his name—who lived out his 80 years in the same town, and hardly ever moved out of the shadow of his own house. Seems he never travelled more than 20 miles from home!

It's hard for us to believe that a man would know much about anything without getting out into the world—when one considers the mode of communication at the time. Mr. Kant must have been a remarkable fellow. He apparently got all he needed for living and working in one spot.

But look how much all this has changed in a period of time that really isn't very long, as history goes.

A couple of weeks ago I was talking to a neighbor of mine. He's a man who travels a good deal, and he told me he'd just returned from a trip.

I was surprised. "Must have been a short trip," I said. "I didn't even realize you were gone."

"Not so short, if you're talking mileage," he answered. "Actually, I flew to California. Got there yesterday afternoon, finished my business by dinner time and took an evening plane back. Got home this morning."

Well, a round trip of over 4,000 miles in 24 hours or so isn't unusual any more. It only proves that with modern transportation it makes more sense to measure *distance* in terms of *time*. The actual number of *miles* means very little.

This matter of distance and time hits pretty close to home in the telecommunication business. Suppose your company is located in Ohio, or Texas, or Montana—any place a few hundred miles from the nearest Stromberg-Carlson sales office and warehouse.

You may logically ask why you should buy Stromberg-Carlson equipment when you can get delivery and service from a manufacturer closer to your home base. Well, I can give you some sound reasons for buying from us, no matter where you're located.

First, there's the matter of *what* you get delivered. If it's XY® Dial equipment—anything from relays and switches to complete PBX's and CDO equipment—you can count on *quality* second to none. That's because our products are backed by the experience and know-how of 63 years in the telecommunication business. And our broad program of research and development assures a constant stream of new and better products.

As far as speed of delivery is concerned, we can give you overnight service.

In view of these facts, the miles that may separate us add up to practically nothing. It was all right for Mr. Kant to live his whole life and do all his work in one place. After all, in his day 20 miles was quite a far piece.

But in our time, in our business, *2000* miles—let alone 20—really isn't very far at all.

John H Voss

Vice President and General Manager
Telecommunication Division

STROMBERG-CARLSON, a Division of General Dynamics Corp., Rochester 3, N.Y.

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

THE J. A. Tel-A-Pen Co., of San Diego, Calif., is a Junior Achievement enterprise, sponsored by the Pacific Telephone & Telegraph Co. The business advisers are: W. H. Parker, A. D. Kluge, and H. R. Lewis, all of Pacific T&T. Last year, this company converted the little colored telephone sets to weighted ball point desk-pen sets and sold 7,600 of them. Their total sales receipts for the year amounted to $20,438.

Undoubtedly, this product is ideally suited to Junior Achievement operation. It has enough production steps and variety for good training, but is not overly complex. It is a highly attractive and useful product, with a ready market. Its only weakness perhaps is the certainty of success and profit, and potential for excessive volume as was encountered by the San Diego company.

This pen set is an ideal item for the local telephone company to use in sponsoring a Junior Achievement company. It is estimated that at least 80 per cent of the sales of the San Diego company was to telephone employes. It is, therefore, an excellent item for the local telephone company to sponsor.

A telephone company interested in sponsoring one of these Junior Achievement companies may obtain complete instructions with supply sources and prices by writing to Mr. W. H. Parker, Manager, Pacific Telephone & Telegraph Co., 8620 La Mesa Blvd., La Mesa, California.

By supporting Junior Achievement, you are building through business for a better America. And this will prove to be good public relations for any Independent telephone company.

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The following is quoted from the second report of the President's Committee on Scientists and Engineers:

"In addition to expanding facilities in our colleges and universities, there is, however, also a great need for reorienting our system of higher education to give more weight and emphasis to shorter terminal courses of less than baccalaureate level.

"The rapid post-war growth of the Junior or community colleges is a development whose further spread the Committee is anxious to encourage.

"The Committee also believes that a wider public appreciation of the important role which can be played by technical institutions of intermediate level, and the establishment of more of these institutions, would do much to help solve our manpower problem. It is estimated that we should have as many as five technicians for each scientist and engineer if these more highly trained, creative specialists are not to be wasted on routine operational or maintenance work.

"The technicians must, however, also be thoroughly and competently trained to do the jobs for which they are needed. We should we well advised to attract to and specifically train for these jobs, the many students with science aptitudes who, for one reason or another, either do not wish or are unable to undertake a four-year degree course.

"The Junior colleges, technical institutes and similar schools can do much to fill the gap in our educational system for those with more modest ambitions and at the same time fill the gap in the ranks of our technical manpower which we (unlike other countries) have too long neglected."

•

There is a definite need at the present time for a tap-proof telephone cable that can be used to insure absolute secrecy of voice communication. This cable should be so designed as to prevent pickup of a conversation by induction.

Various attempts have been made to design such a cable, but to date these have not proved entirely satisfactory. One arrangement consists of a double shield, each part insulated from the other. A Wheatstone bridge arrangement is balanced between the two shields so that when they are tampered with, an alarm is sounded. A high frequency tone on the shield prevents inductive pick-up of voice.

To date, the troubles on secure cable are the critical adjustments that must be maintained on the control equipment. There is no doubt that these problems will eventually be solved and when they are, there will be a sizable requirement for secure telephone cable.

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We received a letter recently from M. A. Klein Jr., of Mathias Klein & Sons, that carries a seal in gold indicating 100 years of service—1857 to 1957.

This is a marvelous record; down through the years, Klein has served the telephone industry well.

The writer remembers well when he started in telephone construction work in Oklahoma back in 1913. After a few days on the job I decided that I must have a pair of pliers even though I was a "grunt" and had no earthly use for them.

So, one night I went into a local hardware store in a little town and bought a pair of 8-inch pliers that I thought were tops. The next day I was flashing them around and an old lineman asked me to let him see them. He looked them over and immediately threw them as far as he could into the brush.

He said: "Kid, you might just as well get started right. These are barbed wire or hog-ringing pliers. Never use anything except Klein's if you expect to be a lineman." He then gave me an old pair of Klein's that I cherished for years.

Other good tools are on the market today, but back in 1913, Klein was the only tool that would cut wire clean so that it would enter a splicing sleeve.

XUM

REPORT OF EXECUTIVE VICE PRESIDENT

Continued from page 31

present allocation of frequencies between 25 Mc and 890 Mc in the light of technical progress. The review is intended to enable the commission to: (1) Determine whether more efficient use can be made of this part of the spectrum; (2) evaluate the long range requirements of existing and potential users of this portion of the spectrum; (3) evaluate what system or systems of frequency allocation for the future would best serve the public interest; and (4) evaluate the feasibility of making long range plans for the future use of the radio spectrum and in particular determine the impact upon users of the spectrum and the general public by ordering such future changes as may appear to be desirable. . . .

Accounting Matters before FCC: During the past 12 months we gave attention to certain accounting matters before the FCC including the following:

(1) In response to a Notice of Proposed Rule Making adopted last January in Docket 11913 our association filed with the commission comments in support of a petition by General Telephone Corp. that the commission's Uniform System of Accounts for Class A and Class B companies should be revised to reflect the principle of deferred tax accounting. Under the proposal appropriate changes would be made in the commission's accounting rules to permit deferral of income tax liability when election is made under the provisions of the Internal Revenue Code to use accelerated depreciation in the computation of federal and state income tax liability. Final action in this matter is being awaited.

(2) Last July we submitted in support of a proposal dealing with cradle-to-grave accounting for station apparatus, wire, small PBX's and TWX equipment. In an order, adopted in September, 1956, the commission adopted the proposal with permission to companies to put the amendments into effect last Jan. 1. Our association is now preparing comments upon a proposal to amend FCC Annual Report Form M to reflect the revised method of accounting for items included in these categories.

The Hush-A-Phone Case — Foreign Attachments: In November, 1956 the United States Circuit Court of Appeals for the District of Columbia handed down a decision setting aside the determination of the FCC a year earlier that the Hush-A-Phone acoustical device interfered with telephone transmission. The commission had sustained telephone company foreign attachment tariff provisions after hearings at which Bell and Independent company witnesses testified in opposition to the use of the Hush-A-Phone. When the case was before the court our association counsel filed a brief and submitted oral argument in support of the commission's ruling. . . .

In February, the commission ordered the defendant telephone companies to file amended tariff schedules rescinding and cancelling any tariff regulations "to the extent that they prohibit a customer from using . . . the Hush-A-Phone device or any other device which does not injure defendants' employes, facilities, or the public in its use of defendants' services, or impair the operation of the telephone system". . . .

The tariffs were filed as directed after conferences between the commission's staff and representatives of the Bell System, our association and Hush-A-Phone counsel respecting the matter of form. It is my understanding that the Bell companies have made or are planning to make comparable filings with the state regulatory authorities.

Engineering Seminar

An activity sponsored by the USITA last summer was an engineering seminar conducted at Michigan State University, running from June 30 through July 26. This was an outgrowth of recognition of the growing need for more engineers in the telephone industry. After considerable exploratory work the sub-committee on Engineering Education of our Personnel Committee chose the university mentioned as the most promising place to have a summer session on telephone engineering problems.

A brochure describing the course was prepared by the university in collaboration with our sub-committee and distributed to Independent companies likely to be interested; and the subcommittee did the screening of "students" for acceptance. The university provided some competent instructors, and six qualified persons from the telephone industry made up the rest of the faculty. One person present as an observer has remarked that the courses presented an excellent program for engineering education in both the management and engineering field and that they had a flavor and emphasis on the prudent control of money.

While perhaps not without certain weaknesses inherent in the initial effort of an educational program of this nature, the seminar has been generally acclaimed as a very successful one. That it should be continued and enlarged scarcely admits of doubt. . . .

National Advertising Program

Our national advertising program, authorized by our board of directors in the spring of 1954, is now in its fourth year. Although a few members of our association are not fully in agreement as to the need for it, the program has been widely acclaimed as meeting a long felt need.

The Independent industry is in the greatest period of its growth. For a long time our branch of the business was an indirect beneficiary of the long-sustained advertising program of the Bell System, advertising which that highly successful corporation has found rewarding over many years. With the increased demands for service in our own areas it became necessary to do something to develop new sources of financing for expansion and plant improvement. There is evidence that our advertising program is helping to acquaint investors with the soundness of Independent telephone companies as investment opportunities and with their importance to the economy of the cities and towns in which they do business.

It was also believed that by giving Independent telephone employes a sense of belonging to an essential industry an advertising program would stimulate interest in employment opportunities among our companies.

It likewise seemed only appropriate that the American people should be made aware of the fact that but for the existence of Independent telephone companies serving two-thirds of the geographical area of the United States, the nation's communication network would not be a complete one. Here again our advertising program is paying off. . . .

Statistical Data

One of the important activities of our association is the compilation and distribution of statistical data relating to the operations of Independent telephone companies. For the past three years, our annual statistical volumes have reflected operating results data not only of Class A and B companies but also of Class C and D. Figures for the current volume were obtained from most A and B companies but not all. Reporting C and D companies represented a very small minority of the total of such companies.

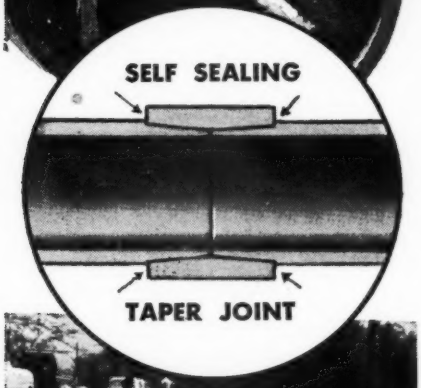
The number of reporting companies by classes for 1956 and 1955 was:

	1956	*1955*
Class A	204	181
B	94	106
C	57	67
D	51	38

Because of the difference in the number of reporting companies from year-to-year accurate comparisons with earlier years are impossible.

(Please turn to page 132)

SMOOTH BORE!



Orangeburg Fibre Conduit Prolongs Cable Life

Protect cable sheath from abrasion and you prolong the life of underground cables, say utility engineers. Scoring of cable sheath creates "trouble spots" that shorten cable life.

That's where Orangeburg Fibre Conduit plays an important part in keeping cables healthy. Orangeburg's smooth bore, its low coefficient of friction minimize the danger of abrasion when cables are pulled in, as well as later on during cable movement. By protecting cable sheath from abrasion, Orangeburg Fibre Conduit adds years to cable life.

Orangeburg's impermeable wall and watertight joints protect cables from corrosive ground waters. Its nonmetallic material is strong, tough, resilient, long lasting.

And, remember, Orangeburg lays faster and at lower cost than other types of conduit. It is light in weight, easy to handle, easy to tool on the job. Spacers, bends, fittings, 5° bend sections and lightweight tapering tool, all combine to simplify installation.

Since 1893, records of long life have proved Orangeburg's durability and economy.

Orangeburg Fibre Conduit is distributed by Graybar Electric Company and General Electric Supply Company with branches and stocks in principal cities.

WRITE DEPT. T-107 FOR NEW CATALOG 52.

ORANGEBURG MANUFACTURING CO., INC., Orangeburg, N. Y. West Coast Plant, Newark, Calif.

ORANGEBURG®
FIBRE CONDUIT

XUM

continuity

One of the achievements of the telephone industry is the way experience and know-how are passed down from generation to generation of telephone people. Not only does this insure steadily good service to the public, but also it perpetuates that *spirit* of service which is shared by telephone people everywhere.

This month magazine readers across the country will find an advertisement called "A Voice of Experience behind the 'Voice with a Smile.' " It's about a supervising operator, her work, her family and her interests. We hope this ad will give readers a better idea of why the telephone industry continues to give the public the finest telephone service in the world. Telephone people are why.

Working together to bring people together
BELL TELEPHONE SYSTEM

PHOTOGRAPH BY ANSEL ADAMS

In the Garden Grove, California, office of Pacific Telephone and Telegraph Company, Supervisor Jean Bullene conducts training and works with her group of operators.

XUM

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Our 1957 statistical volume reflecting figures for the year 1956, shows that 207 Class A companies accounted for 6,878,246 stations; 110 Class B companies 287,370; 73 Class C companies 92,364 and 47 Class D companies 27,277, a total of 7,285,257. This represents a station increase over 1955 of 645,795. The company-owned stations of these 437 Class A, B, C and D companies made up about 80 per cent of an estimated 9,112,000 stations served by 4,390 Independent telephone companies in 1956, the reporting year.

The total plant investment of reporting Class A, B, C and D companies on Dec. 31, 1956, amounting to $2,013,054,000, was $300,437,000 greater than the amount recorded at the close of 1955. Reporting companies' total plant investment was 87 per cent of the total industry which was about $2,323,052,000.

In 1956, Class A, B, C and D companies reported gross operating revenues totaling $570,929,000, an increase of $67,776,000 over 1955. Thus the 437 reporting companies accounted for about 88 per cent of the estimated total revenue of $648,222,000 for 4,390 companies. The above mentioned revenue figure of $570,929,000 was derived from the following sources:

$370,587,000	Local
178,728,000	Toll
21,614,000	Miscellaneous

Annual gross operating revenue per station rose from $78.65 in 1955 to $81.79 in 1956, while operating expenses including federal income and other taxes rose from $64.95 to $67.30. The average per station revenue of Class A Independent companies alone was $82.90. By way of contrast, it is interesting to note that the average annual per station revenue in the Bell System was $121.80 while operating expenses including all taxes amounted to $105.26. The ratio of expenses to gross revenue for all reporting Independents was 82 per cent. This compares with 86 per cent for the Bell System.

Operating expenses excluding taxes for A, B, C and D Independent reporting companies rose from $314,150,000 in 1955 to $355,726,000 in 1956. The increase in operating revenues exceeded the increase in operating expenses by $26,200,000.

The tax burden amounting to $114,064,000 increased $12,699,000 over 1955. The largest increase in operating costs was in maintenance expense. In 1955 this expense amounted to $89,771,000 and in 1956 it was $103,766,000, an increase of $13,995,000.

The net amount available for payment of fixed charges increased in 1956 over 1955 by $13,928,000. The total amount which was available for fixed charges at the close of 1956 was $103,174,000, compared with $89,246,000 at the close of 1955.

While as heretofore shown plant investment in 1956 increased $300,437,000, net income available for dividends increased $9,840,000. Net income available for dividends rose from $66,846,000 in 1955 to $76,686,000 in 1956. The 1956 amount represents a return of 3.8 per cent upon a total plant investment for A, B, C and D reporting companies of $2,013,054,000. For Class A companies alone the rate of return was 3.9 per cent. In 1955, the return on a plant investment for all companies of $1,712,617,000 was 3.9 per cent. . . .

A keen student of the trade association movement in the United States has expressed the opinion that "when democratic institutions are crumbling around us in the political world, when the paternalism of the American government encompasses the welfare of the individual from the cradle to the grave, and when the very security of the country seems to demand procedures foreign to the freedoms known to de Tocqueville, the trade association stands as a powerful institution which can, if encouraged, help guarantee the continuation of democratic institutions."

The review of association activities which has been given in this report, read in conjunction with committee reports, shows, I believe, that the USITA continues to be energetically engaged in acquitting its responsibility to the Independent industry.

JUDICIAL AND REGULATORY TRENDS

Concluded from page 90

covers are generally distributed by a telephone company? It might well be the telephone company, or the directory advertising company; or a combination of both could well afford to make distribution of such a cover. Obviously, we would have to weigh the cost of the covers against probable lost revenue from foreign directory advertising. And, I dare to predict that lost revenue to us, resulting from directory advertising appearing on foreign covers is potentially serious. Another possibility comes to my mind in answer to those of you who may say that, "after all a great many people wouldn't even want these covers, nor would they use them if they were supplied." We could, of course, supply our own covers for a token charge, but I doubt if the average patron would lay out even 25 cents for one of our covers if they could obtain one free from some outside source. Then there is a possibility that we might insert a coupon, so to speak, in our directory, with instructions that if it is brought into the office, or mailed in, we would supply, without charge, a clear plastic directory cover.

It would be interesting, to me at least, to expand on this subject at greater length. I believe, however, that my time must be about expended, so I must come to a conclusion:

Do we want the foreign billboard cover?

Or, do we want the clear plastic "*do it yourself*" cover?

Or, perhaps (and this is an afterthought), do we want a combination of *our own* billboard cover on the front (advertising sold by our industry), with a clear plastic "do it yourself" cover on the back? This combination would permit the option of resting the directory face down, presenting its better side to discriminating eyes.

We might just possibly have to make that decision!

If I have given you anything worthwhile to think about, and your boss is not in attendance here today, you can take the idea home as original and nobody will be the wiser. On the other hand, if you should think my imagination has gotten the best of me, all you have to do is shrug it off and just say, that Hoosier just doesn't know what he's talking about.

Ohio Independents Name Maxwell Vice President

Raymond J. Maxwell, general manager of the Mansfield Telephone Co., was recently elected vice president of Ohio Independent Telephone Association by the association's board of directors. He succeeds H. F. Clapper, Greenville, who found it necessary to resign his association post.

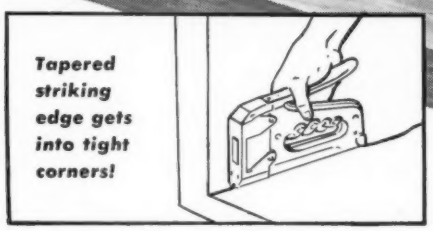
Mr. Maxwell joined the Mansfield Telephone Co. in 1931. He served as secretary and treasurer of the company until April of this year when he was appointed general manager.

Leave Mediocrity Behind

"There is a very small dividing line between mediocrity and achievement. So many people make little effort to ward self-improvement and do scarcely more than necessary to get by. Consequently, the person who is willing to make even a modest extra effort stands out in the crowd."—WALTER J. BRAUNSCHWEIGER, *executive vice president, Bank of America.*

One Arrow staple gun fastens them all!

ONLY ARROW'S T-25 STAPLE GUN TAKES 3 STAPLE SIZES TO FASTEN ANY INSIDE OR OUTSIDE WIRE UP TO ¼" DIAMETER!



- T-25 staple gun holds ⅜", 7/16", and 9/16" round crown, rust resistant staples, a full ¼" in width.
- Safe! No short circuits possible automatic mechanism stops staple at right height.
- Short span handle provides comfortable grip – minimizes fatigue.
- Arrow tackers are jam-proof! Can't jam even when struck against metal! Never any lost time on the job. Fully guaranteed
- No wire sag ever! If staple used doesn't hold wire taut, simply use next shorter leg length to insure firm hold and neat job.
- Staple leg lengths are long enough to insure firm hold in wood, plaster or composition board, etc Tack-pointed staple legs diverge to give even greater holding power
- Check staple supply in tacker simply by looking on underside of gun.

T 25 LIST PRICE **$15.00**

Try Arrow without obligation!

Tackers will be sent on approval for testing purposes. Send request to Telephone Division.

Available at your regular supply house. Priced for volume use!

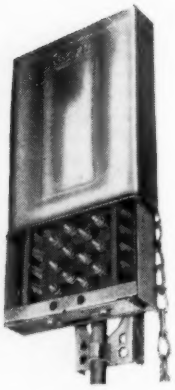
ARROW T-75 FOR ANY INSIDE OR OUTSIDE CABLE UP TO ½" IN DIAMETER!

- T-75 tacker holds 9/16", ⅝" and ⅞" tack-pointed, rosin-coated staples, a full ½" in width
- Fastens 21 pair inside wiring cable, 26 pair, 12 pair wires, etc.
- Has all above mentioned Arrow features (except tapered head) to insure maximum speed and efficiency of operation!

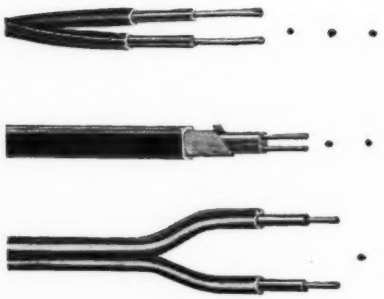
T-75 LIST PRICE: **$15.00**

ARROW FASTENER CO. INC. 1 Junius Street, Brooklyn 12, N. Y.

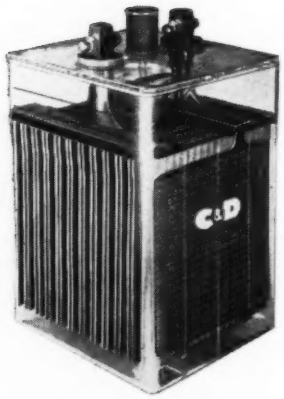
XUM



The Type XB Unprotected Cable Terminal features a Bakelite faceplate and insulating fanning strip molded in one piece, with Everdur studs positioned for easy wiring. Available in 6, 11, 16, and 26 pair size, with or without cable stub.
COOK ELECTRIC COMPANY.



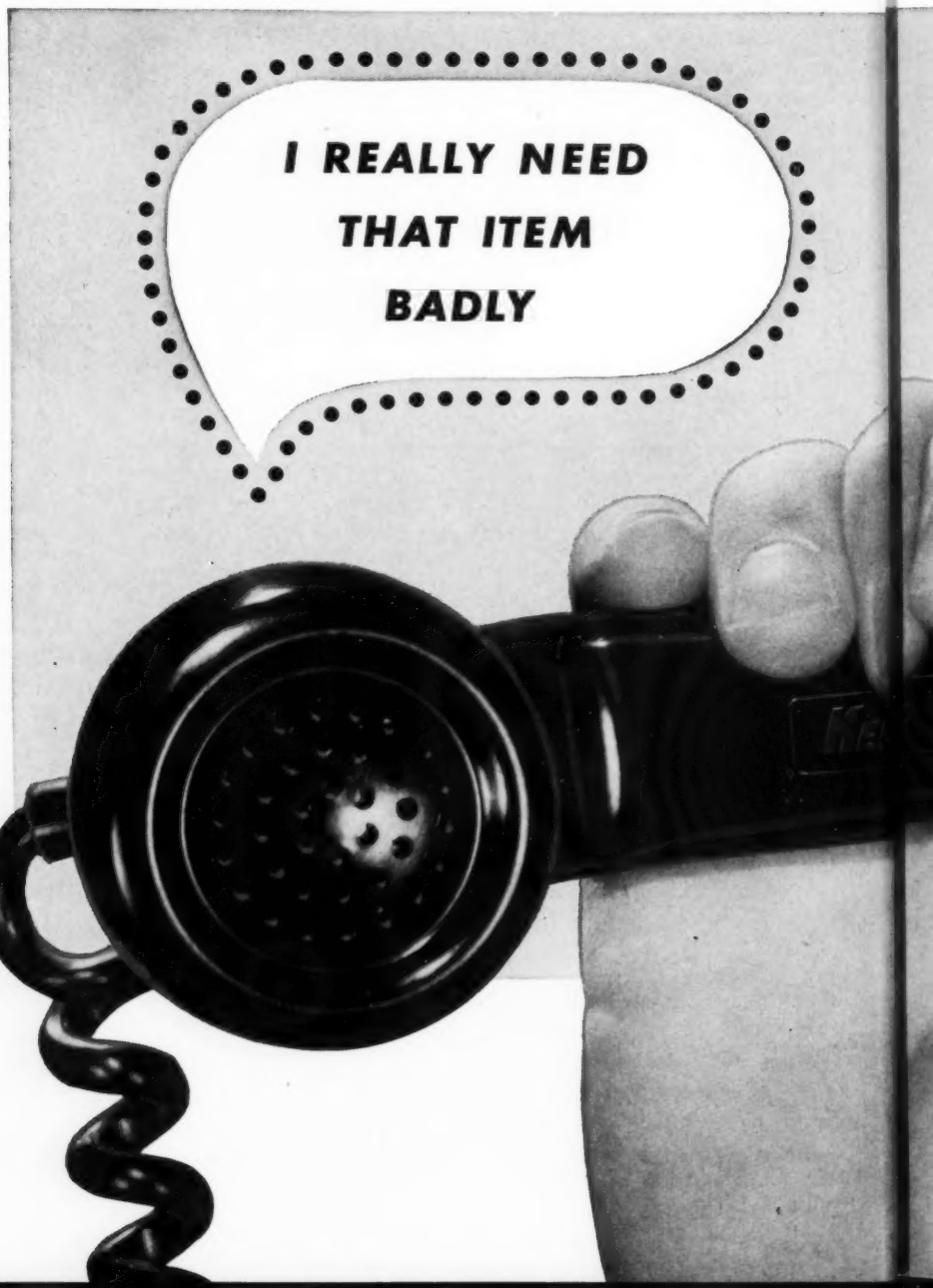
Afraid of Winter? Keep your lines in action—your maintenance costs down, with DIAMOND WIRE & CABLE CO.'s RED-D Drop Wire. Superior adhesion, conductivity, tensile strength. Available in Copperweld and Signal Bronze.



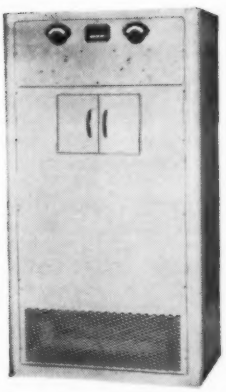
Extra-Long Life!—The suspended and supported plate construction is an exclusive feature of C&D BATTERIES. Choose C&D PlastiCal (lead-calcium grid) for life expectancy of 25 years . . . for 14 years expectancy, specify PlastiCell (high tensile lead alloy grids). Made by C&D BATTERIES, INC.

Save Three Ways . . . on materials, manhours, and maintenance with INDIANA STEEL & WIRE CO.'s Crapo HTL-85 and HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, protected with heavy ductile coating of zinc.

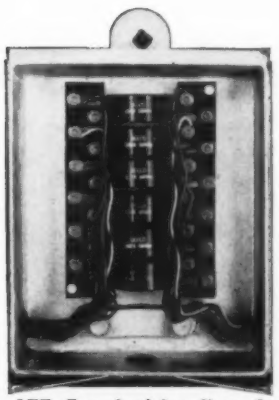
Kellogg's Standard Outside Plant Handbook now available at special price while quantities last. Reduced to $2.75 a copy, with ten or more copies priced at $2.50 each. Every phase of outside plant telephone pole line construction is covered in book.



More Holding Power—Less Load per Blade!—The Chance 8-Way Anchor distributes the load all the way around the hole. Expands to form a complete pyramid shaped square. Made in sizes from 60 to 200 square inches in area. Made by A. B. CHANCE COMPANY.



Self-Contained Unit—The 3-phase Flotrol Automatic Constant Voltage Battery Charger has no moving parts—all components in one cabinet. No separate units to install. Designed for plants requiring 25 to 400 amps charging capacity.
LORAIN PRODUCTS CORPORATION.



Type 177 Terminal-Loading Case. A cast aluminum combination terminal box and housing for loading coils. For use with the new rural distribution wire for 6, 11 and 16-pair capacity. Available in 8 types. Terminals, available with or without protectors, accommodate loading coils of 88MH or 44MH inductance. COMMUNICATION EQUIPMENT & ENGINEERING CO.

WE HAVE IT IN STOCK
AND WE'LL SHIP IT TODAY

"We have it in stock and we'll ship it today." That's the answer that sounds so good when you need line supplies badly. And that's the answer you expect when you call Kellogg for emergency service. Kellogg has the largest inventory of telephone line supplies available . . . and Kellogg trained personnel are ready to give you fast service when you need it.

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Midway 6-7908

504 County Bank and Trust Bldg.
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Prescott 9-3610

1515 Turtle Creek Blvd.
Dallas 7, Texas
Riverside 7-5191

23 Broderick Road
Burlingame, California
OXford 7-5780

1555 West Fourth Street
Mansfield, Ohio
LAfayette 4-6511

1594 Southland Circle, N.W.
Atlanta, Georgia
Sycamore 4-2441

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RECENT CHANGES IN FCC ACCOUNTING

Continued from page 46

tomers' premises should be charged to Account 171. There shall also be charged to Account 171 the cost of line and number deassignment and of central office testing incident to the operation.

(2) The disconnection costs incurred at the central office should be charged to Account 604.

(3) There shall be no retirement credit made to Account 232 at the time of disconnection.

(4) The amount previously charged to Account 221, Central Office Equipment, representing the cost of making connections in the central office, should be credited thereto and charged to Account 171, Depreciation Reserve. Note A to Account 604 contains provision for an optional method of accomplishing this accounting on the basis of net decrease in lines over a period of time.

(C) *Accounting for Installation of Station Apparatus Involving Reuse of Station Connections:*

(1) When station apparatus is installed on premises where a portion of the station connections previously retired are reused, the cost of installation at the customers' premises, together with the cost of line and number assignment and central office testing, shall be charged to Account 232.

(2) The station connection components which are thereby returned to service (based on actual cost or estimated average unit cost) shall also be charged to Account 232 and credited to Account 171.

(3)) The cost of connecting customer lines in central offices, i.e., running jumper wires, putting in heat coils and protector blocks, etc., is includible in Account 221, Central Office Equipment. Note A to Account 604 contains provision for an optional method of accomplishing this accounting on the basis of interim use of Account 604 with later adjustment depending on net increase in lines over a period of time.

(D) *Accounting Upon Reconnection of Left-In Stations:*

(1) The cost of reconnection at the customers' premises will be charged to Account 232.

(2) The costs of line and number assignment and central office testing incident to station reconnections shall also be charged to Account 232.

(3) The cost of connecting customer lines in central offices, i.e., running jumper wires, putting in heat coils and protector blocks, etc., is includible in Account 221, Central Office Equipment. Note A to Account 604 contains provision for an optional method of accomplishing this accounting on the basis of interim use of Account 604 with later adjustment depending on net increase in lines over a period of time.

(4) There will also be made at this time a credit to Account 232 and a charge to the depreciation reserve to retire the original cost (based on actual or estimated average unit cost) of the old station connection components associated with the left-in station which are retired as a result of the reconnection work. The amount of this retirement should be such as will, on the average, remove from Account 232 the costs which would otherwise be duplicated therein by the capitalization of the reconnection costs under (1) and (2) above.

(E) *Accounting for Disconnections and Reconnections in Instances of Provisional Denials and Temporary Suspensions of Service.* The cost of disconnections to effect provisional denials of service for non-payment and of reconnections to restore service in cases of provisional denials which have not become final, or of these actions incident to temporary periods of non-use, such as vacations, which are not terminations of service, shall be charged to maintenance as follows:

(1 To the extent incurred at customers' premises, to Account 605, Repairs of Station Equipment.

(2) To the extent incurred at the central office, to Account 604, Repairs of Central Office Equipment, except that central office testing incident to such activities is chargeable to Account 603, Test Desk Work.

Mr. Buzzard told you last year that the General Telephone System was developing detailed instructions for the adoption of the new station accounting procedures. I have seen these instructions and they are most comprehensive. I understand copies may be obtained upon request to the General Telephone people.

I had hoped to be able to report to you today what changes in its accounting rules, if any, the commission had decided upon because of liberalized depreciation as permitted by Section 167 of the Internal Revenue Code of 1954 when used in preparing income tax returns but not used in the accounts. Many of you will recall that in September, 1956, General Telephone Corp. petitioned the commission to amend its Uniform System of Accounts for large telephone companies so as to permit what is generally known as normalization accounting by companies using liberalized depreciation for income tax purposes. This contemplates accounting so that total recorded operating expenses are left unaffected by the use of liberalized depreciation. The system of accounts as now written permits charging to operating expenses only the amounts of tax liability actually incurred in the accounting period. This is often referred to as "flow-through" accounting.

The commission instituted a rule-making proceding as a result of the General Telephone Corp. petition. Comments were received from six state public utility commissions, five communications companies, USITA, two public accounting firms, and a labor organization.

(Please turn to page 139)

FREE DATA FILE →

New compilation offers full facts on chargers, shows how to obtain maximum battery life!

Now available for the first time in one complete, concise folder is the latest information on battery chargers for telephone application. Based on Raytheon's 27 years' experience in telephony, this authoritative compilation of engineering facts describes the relationship between battery charging and battery life, clearly explains charger operation and, most important, shows how proper charging can help you obtain the longest possible life from your batteries.

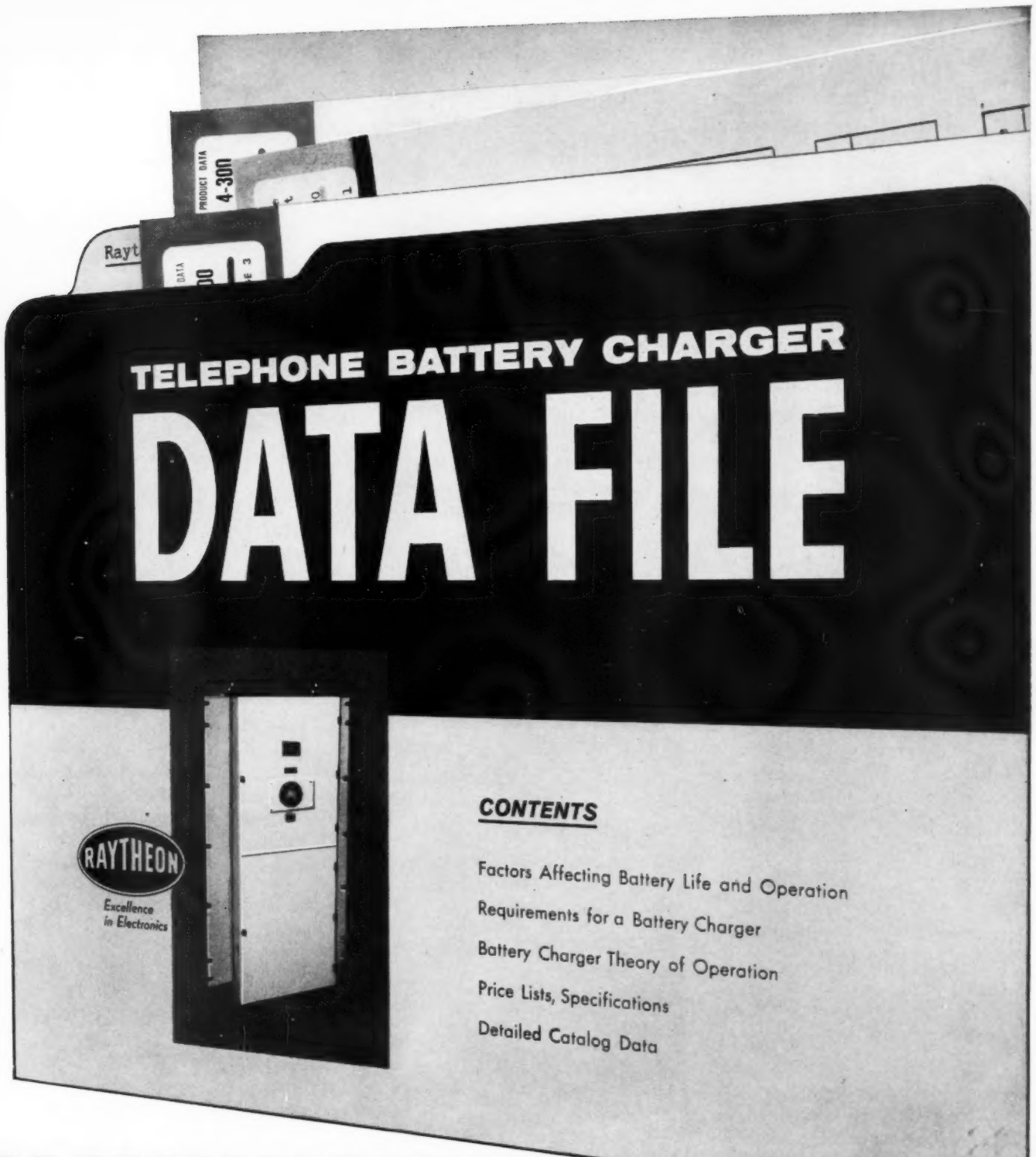
Detailed catalog information and price lists are also included in the Raytheon data file. For complete battery charger facts in one convenient folder, please write today. Use the handy coupon—no obligation, of course.

TABLE OF CONTENTS

Factors Affecting Battery Life and Operation • Requirements for a Battery Charger • Battery Charger Theory of Operation • Price Lists, Specifications • Detailed Catalog Data

RAYTHEON *Excellence in Electronics*

Send Coupon NOW →



TO: Raytheon Manufacturing Company
Commercial Equipment Division, Waltham 54, Massachusetts

Gentlemen:

Please send me your Battery Charger Data File, without cost or obligation on my part.

NAME .....
(Please print)

COMPANY .....

ADDRESS .....

.....

A-4038

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construction and maintenance DIGEST

- Profitable noise
- Weather defier
- Slick slack puller
- Ready to wire in
- 25 years young

Published regularly to help you get the most out of your materials and supplies dollar

by Philip W. Blood, Office Mgr. and Inside Sales–Pacific Coast

In my 14 years with Stromberg-Carlson I've come to know the careful attention paid to supply orders like yours. When you order equipment from Stromberg-Carlson, **everybody** makes sure it's right. First, the manufacturer. He produces a long-lived product and his good name comes with it. And then Stromberg-Carlson–in delivering the product to you–gives you a guarantee backed by our 62-year reputation. So you get your money's worth for day-to-day operations–and you invest something in the future, because it's your supply business that plays a major part in helping us continue our research for new and better telephone equipment. It's business we certainly appreciate–thanks a million for your continued support!

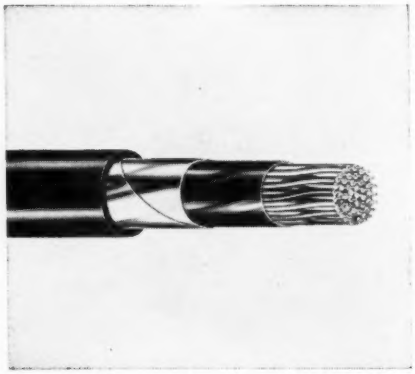
Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location–and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth–or give **you** the money as monthly income on a telephone which completely licks the noise problem?

The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset–even in a spot as noisy as a boiler factory!

Gives maximum protection

This cable made by Ansonia Wire & Cable Company offers finer electrical characteristics than any other comparable cable.



Available in 24, 22 and 19 gauge, 11 through 404 pair

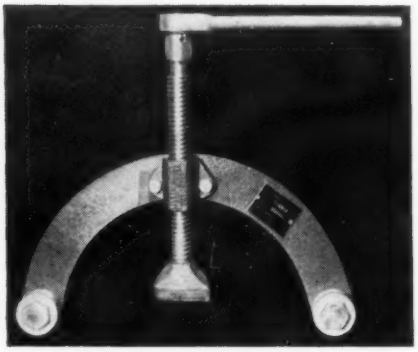
To get maximum protection against moisture and weather, specify Ansonia Type 775-P Aerial and Duct Cable.

Its conductors are individually insulated with polyethylene and paired with systematically varying lays to eliminate cross-talk. The cable is shielded with aluminum tape and protected by a tough, plasticized polyvinyl chloride jacket.

Take up slack With a twist of the wrist

Rugged! Easy to use! Rust-protected! Here's a real he-man tool, in compact size.

The LG12 Little Giant slack



"Little Giant" makes cable slack pulling easier.

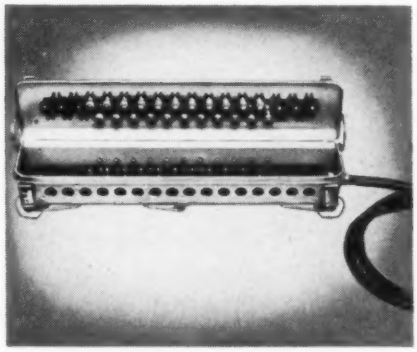
puller consists of a ¾" x 2" hot-rolled steel yoke, with 2" cold-rolled steel rollers attached to the yoke by a ¾" steel shoulder stud.

Tightening screw is finest steel with 1" square thread. Ratchet handle, designed for easy action, or ½" cold-rolled steel slip handle with free slippage within the screw head. All steel cold-rolled parts are cadmium plated. Steel yoke is painted.

Width: 20". Height: 15". Weight: 18 lbs.

Compact—convenient—weatherproof

You'll find the Cook "Stranterm" strand-mounted cable terminal compact, light in weight, easy to install



Available with lead or plastic stub in 6, 11, 16 and 26 pairs.

and extremely convenient for connecting or changing drops. It's furnished ready to wire in, complete with drawn box and cover of anodized aluminum alloy.

Cook Electric Company's "Stranterm" is the only strand-mounted terminal which can be installed unprotected and later be protected optionally by the insertion of Cook Minigap or Mytigap arresters.

The housing of this terminal is weatherproof. Wide-arc hinges and automatic cover stop make the interior more accessible for servicing.

These two battery types give you decades of good service

Here's a dependable power supply for you with a life expectancy of **25 years!** It's the C & D PlastiCal telephone battery, and when we say it will last 25 years, we're thinking about **full float service.**

This low-cost PlastiCell battery has life expectancy of 14 years. Its PlastiCal counterpart will last you 25 years.

You get this extra-long life because C & D PlastiCal (lead-calcium grids) batteries have an exclusive suspended and supported plate construction.

If a 14-year life expectancy will fill your needs, C & D has an economical battery for that, too. It's the PlastiCell battery, using high-tensile lead alloy grids.

In the picture, you see one of these PlastiCell batteries. It's the CE-11 and has a 300 A.H. capacity. In PlastiCal, specify PCE-300.

Distributed by

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

As you can well imagine, with the number of comments received there is among them both support and opposition to almost every possible course of action. The commission has not been able to complete its consideration of the problem and issue a report.

Recently, I was informally contacted by the headquarters staff of your association as to the possibility of reclassifying prepaid items from a separate non-current classification to current assets in the balance sheet. I understand this suggestion originated with a member of your Accounting Committee. As you no doubt know, the amount of prepaid items is of more significance to telephone companies than to other utilities because of the relatively large investment in prepaid directory expenses. Preliminary studies which we have made indicate that many other systems of utility accounts classify prepaid items as current assets and many accounting authorities agree with that concept. Before any such change could be made, however, rule-making procedures would be necessary.

Review of the question of what is or what is not a current asset focused our attention on Account 122, "Material and Supplies," which is now classified as a current asset. It may be that materials held for plant construction purposes might more properly be included in a balance sheet account in the plant group. This would result in splitting the existing material and supplies account and retaining as a current asset only those materials and supplies held for direct future charges to operating expenses. It is recognized that the distinction between construction materials and those materials and supplies used for other purposes may involve some difficulties. However, it is believed that the difficulties are not insurmountable and arbitrary divisions may be practicable, such as including materials which are used for maintaining plant other than buildings and work equipment in the construction materials account.

If you have any questions with respect to the matters discussed in this paper, I will be glad to attempt to answer them. However, if you have questions as to interpretation of the rules with respect to station accounting, or any other matter, I would appreciate it if such questions were submitted in writing to the Federal Communications Commission. As you can appreciate, the answers to such questions which come to us (and they come from various sources) are usually not obvious and require some research and study into the various inter-related sections of the rules, previous interpretations of similar subjects and sometimes background material at the time the particular rule was first promulgated. An "off-the-cuff" answer is difficult, would have no official sanction and might not be the same answer you would get after mature deliberation and discussion with the staff.

ACCOUNTING MECHANIZATION

Continued from page 50

chine any accumulative totals which we desire any time during the month. This would, of course, mean considerable savings through the elimination of manual or printed reports and records in the property and cost field.

The preparation of payrolls is probably the most popular application for punched card, and more recently for electronic equipment, of all operations in the telephone business, as well as in other industries. The first 80-column punched card payroll installation was made in the Bell System about 20 years ago and now about 80 per cent of our employes are paid through punched card procedures. About 20 Independent companies are using punched card payroll procedures.

Mechanization of the payroll field has been relatively complete since by machine we can—

(1) Compute pay, overtime, differentials, car fare, etc.

(2) Withhold payroll taxes, including federal income, social security, and state and local taxes.

(3) Withhold allotments, such as life insurance, savings bonds, hospitalization insurance, etc.

The mechanization of payroll work has resulted in minimizing the paper work necessary by the operating departments as well as the accounting department. It has facilitated the preparation of tax and statistical reports to government bodies. It has resulted in fewer pay draft errors and more expeditious preparation of pay drafts. Also, extremely important has been the fact that it has facilitated the wholesale changing of payroll records due to changes in payroll taxes or wage rates.

Four companies in the Bell System have recently installed medium scale magnetic drum electronic data processing equipment to perform the payroll job. As in the case of property and cost accounting this has made possible the elimination of additional manual steps incident to the job. Through the use of electronic equipment, it is possible to perform most of the essential payroll tasks in a single run of cards through the machine. One company in a single run now computes gross pay including overtime, differentials, car fare, etc.;

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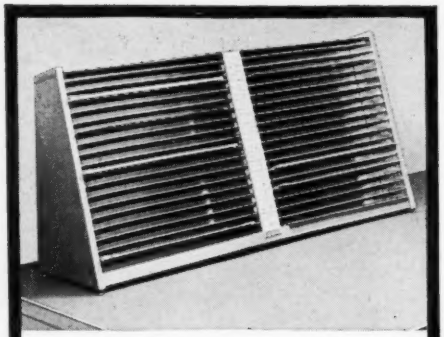


Trouble Recorder Card Rack

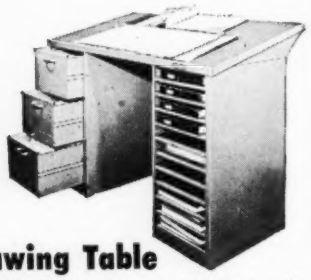
For fast orderly sorting of Trouble-Recorder cards, has 38 card slots in two banks with index strip between. Base is 38" by 8". Height 15". No. D30225-1.

Telephone Office Equipment

to lighten your work and improve efficiency

Work Bench

For repair, assembly, test and paper work. Top drawer divided into 24 compartments for parts and tools. Large file drawers are for circuit drawings. 54" x 25" top covered with masonite. Height 36". Drawers may be inserted from back to reverse position of kneehole. No. D29978-3.



Drawing Table

For circuit drawing in crossbar offices, provides central location for reference material. Masonite top is 30" x 60". Height 36" at front, 42" at rear. Three large file drawers at left for drawings. Eleven shelves at right are 2½" high, 14" wide, 18" deep for sketches, sequence charts, book type SD sheets, trunk serials, etc. No. D30326-1.

Color of all units: Baked-on gray enamel unless otherwise specified.

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MANUFACTURING CO.
517 LOWRY AVENUE N.E.
MINNEAPOLIS 18, MINN.

computes and withholds all taxes; withholds allotments; suspends allotments due to insufficient pay; and prepares summary cards for later printing of tax and administrative reports and accounting classification details. The machine, in addition, on traffic payrolls translates a basic hour code into worked hours and paid hours thereby simplifying payroll reporting for the traffic operating force.

The data processing activities in the telephone industry have not been confined, however, to what has been considered the traditional accounting job. We have recognized that the problem of reducing clerical costs is not confined to the accounting department. In fact, in some cases, the rate of growth of clerical forces has been greater in the operating departments than in the accounting department. Consequently, many companies have formed clerical operations or business procedures organizations to look into ways and means of reducing clerical costs. These committees have not been mechanization or electronics groups. Instead, their task has been to look at the basic clerical job to determine if the end result of the operation is necessary to the business, to determine if the method can be simplified or streamlined. to determine if the job is being performed at the best place at the best time, and finally, if the best tools are being used to perform the job. This activity has resulted in improvements in clerical procedures and at the same time has produced many candidate jobs for mechanization.

Recognizing that there are efficiencies and economies to be gained through the centralization of "know-how" and equipment in data processing activities, the Bell System has fairly generally adopted a plan for organizing centralized data processing centers under the supervision of the comptroller. Under this plan the basic requirements of the job to be mechanized are established by the operating department but the technical machine methods are developed by the accounting organization. Considerable headway has been made under this program and a substantial number of operating department clerical jobs have been mechanized. Representative of these are:

(1) Trunk facility engineering.
(2) Traffic point-to-point and message-mile-minute studies.
(3) Cable trouble analysis reports.
(4) Left-in station records.
(5) Subscriber trouble reports.
(6) Wage surveys.
(7) Employe attitude surveys.
(8) Directory delivery schedules.
(9) Commercial sales analysis reports.

Many of the above jobs as well as other operating department functions are presently mechanized in the Independent field as well.

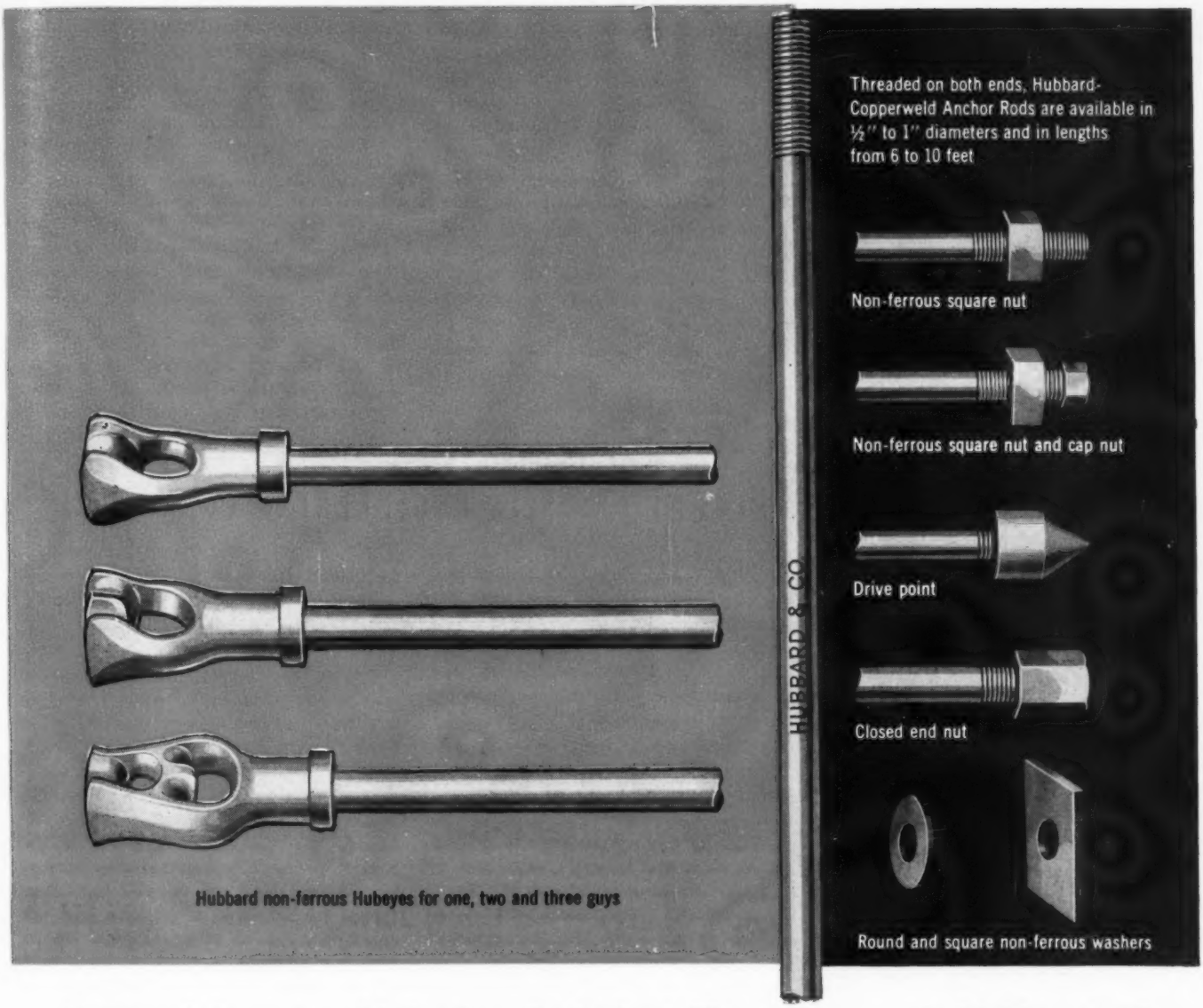
In connection with the use of electronic data processing equipment for operating department clerical jobs, considerable interest has been shown in the facilities assignment field. The General Telephone Co. of California has ordered a Type 705 electronic data processing system to perform the cable pair and line assignment functions. Under this plan the machine will make the cable pair assignment for each service order and print the service order from which the plant force will make the installation. A similar study plan has been under study in the Michigan Bell Telephone Co., although no final equipment decision has been made.

Having taken a look at the extent to which telephone clerical operations are being mechanized, we might consider for a moment some organizational aspects of mechanization. Because of the economies inherent in getting the maximum use of any given machine, there are sound reasons for a business to centralize clerical and data processing functions. However, centralization of clerical work is not without its problems.

As the office moves farther away from the field operation, problems arise in supervision of the flow of work into the office, in scheduling the priority of work, in communication with the field, and in giving prompt record and report service to the operating people. Consequently, there has been a trend toward the decentralization of data processing work in some companies in order to establish a closer working relationship with the operating organization.

With a smaller volume of machine work to process, it is, of course, more difficult to "prove in" mechanization. However, with the expanding nature of the data processing job due to the mechanization of operating department functions, it appears that an economical work load can be generated in a relatively small telephone operating unit. For this reason it appears to us that we will see punched card installations, and someday even electronic installations, in organizational units of a size for which we have never considered mechanization economical in the past.

However, another important factor working away from decentralization will be the effect of improved data transmission techniques. As faster and more reliable facilities for transmission of data from field points to a centralized data processing center become available, many of the difficulties now


Hubbard non-ferrous Hubeyes for one, two and three guys
HUBBARD & CO.
Threaded on both ends, Hubbard-Copperweld Anchor Rods are available in ½" to 1" diameters and in lengths from 6 to 10 feet
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Hubbard-Copperweld Anchor Rods last like copper... hold like steel

Corrosive soils and surface water, perpetual enemies of anchor rods, more than meet their match when they attack Hubbard-Copperweld Anchor Rods. The molten-welded copper exterior of the rod provides the permanence of copper to prevent rust and corrosion. The steel core assures a strong, dependable anchor for overhead lines.

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inherent in a centralized system may be overcome. The ability to concentrate data in this manner in many cases will permit the economic utilization of larger and faster processing equipment.

Obviously, it is impossible to make any universal conclusions concerning the proper size and place for a data processing organization in the business. Each of us must make the decision based on the situation with which we are faced.

In conclusion, I would like to restate a few general observations:

First, that the rate at which the telephone industry has mechanized the accounting job, while moderate, indicates a sound approach from an economical and organizational standpoint.

Second, that we should continue to closely analyze the real accounting requirements of the business before going ahead with mechanization.

Third, that we should give careful attention to the basic form of data origination (the putting of our source documents into "machine language"), in any consideration of data processing.

The telephone industry will continue to grow both physically and technologically and our accounting procedures should keep up with this development as well as make helpful contributions to this growth. To accomplish this, we must be willing to continually examine our paper work objectives and modernize our methods for doing the job.

REPORT OF USITA ENGINEERING COMMITTEE

Continued from page 51

and cable manufacturers, considerable progress was made towards the uniform color coding of conductors and the establishment of industry standards. This effort will receive further attention from both the engineering and plant committees.

A significant meeting of the plant and engineering committees in joint session was held in Chicago on May 7 and 8, 1957. All members of the Engineering Committee were in attendance as were Mr. Ruggles, chairman of the DDD sub-committee and Mr. Richert, secretary. Considerable discussion was had relative to the organization and duties of the two committees. The Engineering Committee concluded that the two present sub-committees, namely, DDD and Radio (et al.), would suffice at this time. New developments and techniques, together with plant design matters, would be the responsibility of the main committee.

In developing the full meaning of the board's instructions to "analyze and report on new developments and their application and performance when not related to the product of a specific manufacturer," the committee agreed that requests for design acceptance—when submitted to the Engineering Committee—would be treated on the basis of accepting a principle of design or operation and not granting or implying specific approval or rejection of an end product. One such request has been received. The product "principle of design and operation" was accorded committee approval.

The committee also agreed that engineering education might properly be made a part of our responsibilities. As a sub-committee of the Personnel Committee, an educational program aimed directly at engineers takes on the appearance of a displaced person. It is requested that the board of directors review the propriety of this organizational arrangment at the time the 1957-1958 committee assignments are made.

The remainder of this joint session was spent in planning and developing a suitable program for presentation at the 60th annual meeting.

Aside from the above specific meetings and conferences, the committee has received and acted upon certain requests for technical information on SAGE projects, subscriber line carrier equipments and microwave facilities. In the future, it is anticipated that the committee can be of worthwhile assistance to member companies by acting as an impartial advisor on technical matters.

Another matter which consumes considerable time and effort of the committee is the continuing liaison with the Sub-committee on Radio and Carrier. Several matters of import have been advanced by the Federal Communications Commission during 1957. A complete report of these activities is contained in the sub-committee report. Here, again, credit must be directed to the outstanding contributions made by the Radio and Carrier Sub-committee. Under the direction of C. H. McLean, the group has performed admirably in a year of unusual activity. Through the efforts of this sub-committee and other association members, it is reasonable to assume that our place in the radio frequency spectrum has been assured for years to come.

Complete reports of the two sub-committee activities are attached as Addenda.

As can be seen, it has been a busy and profitable year. We are looking forward to our second year of operation with enthusiasm.

(Please turn to page 146)

Only 500 subscribers—only 6,000 toll calls per mo.

Yet Goodrich Telephone Company saves 40 hrs. each month with Recordak Toll Billing System.

Here's proof again that Recordak Microfilming pays off—even in the smallest companies!

Take the case of the Goodrich Telephone Company in Goodrich, Michigan. Before they adopted Recordak Microfilming, each toll call had to be described by hand on customers' bills. This was a 45-hour job! Errors were bound to occur. Besides, checking inquiries was a costly chore. Sometimes, it would take up to three hours to find a 15¢ item in the ticket files.

Recordak Microfilming has changed all this! Now toll tickets are photographed on a Recordak Junior Microfilmer . . . total charges and tax are entered on bill . . . then toll tickets are attached and mailed with it. Nothing could be *more simple*. Most important, it takes *85% less time* than the old way. And when a ticket does have to be checked, it's easy on the Junior's built-in film reader!

Recordak Junior Microfilmer combines Microfilmer and Film-Reader in one.

Subscribers' reaction has proved 100% favorable. They like to get original toll tickets with the bill. Helps them remember their calls.

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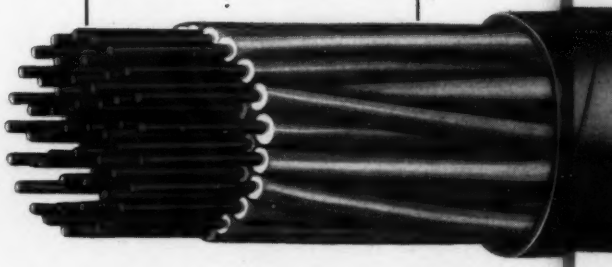

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(Supplied with protective aluminum armor and outer polyethylene jacket when intended for direct burial)

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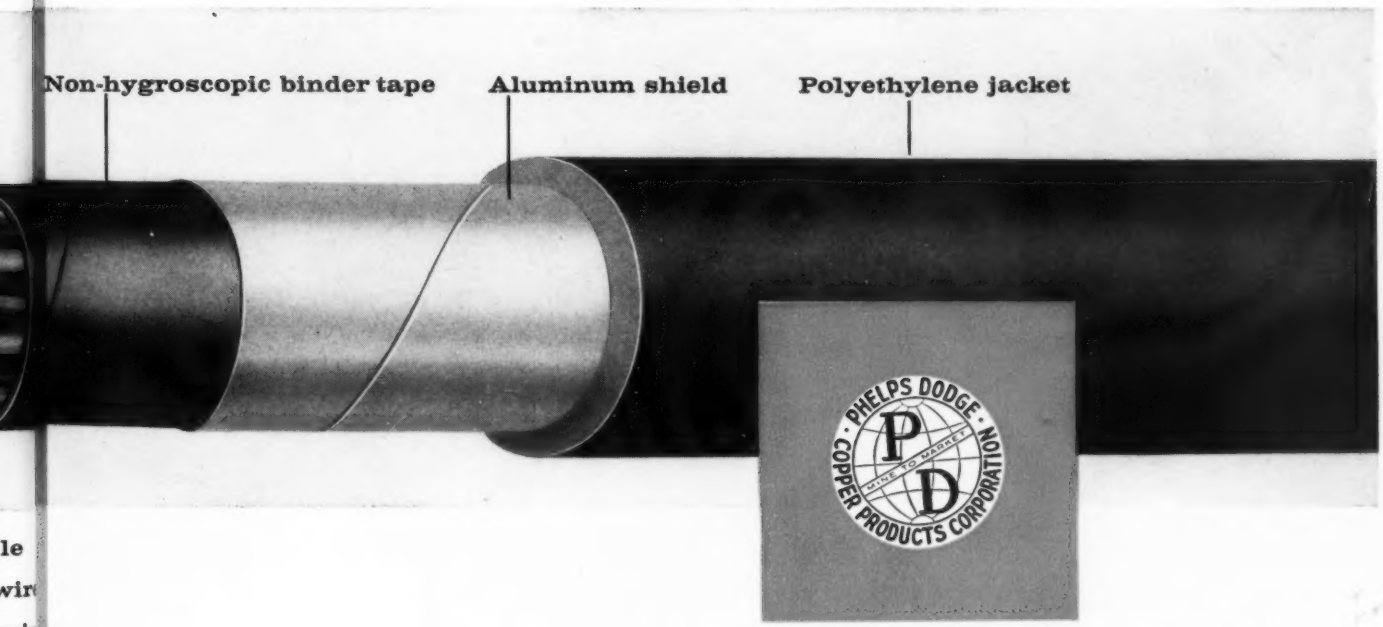
**Mylar—Du Pont's polyester film.*



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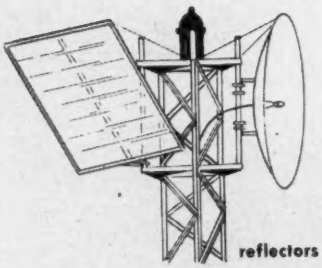
In Microwave Towers and Reflectors . . . . .



reflectors

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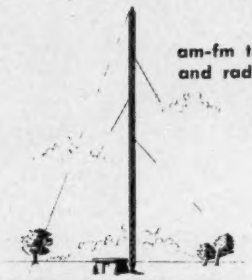
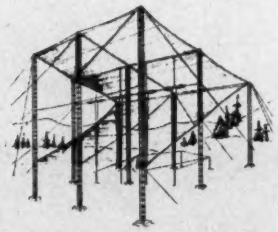
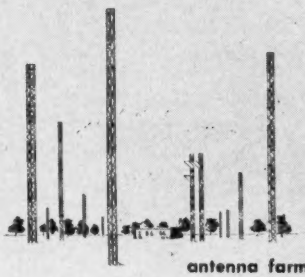


am-fm towers and radiators

high gain corner reflector antennas





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Annual Report
Engineering Sub-committee on DDD

The activities of this committee during the past year have been of an informal nature except for one meeting with AT&T company's representatives on Feb. 25, 1957. During this meeting, a number of subjects were explored with the idea of indicating to our committee some of the problems which growth of toll traffic may present to the industry.

One of the subjects (flash busy elimination) had not been completely resolved at the time. Subsequently, it was officially announced that no longer would flash busy be required as a supervisory feature of operator toll dialing. Tone busy will be acceptable on all new installations, but it may be some time before flash busy is eliminated in existing offices. This information has been transmitted to the Independent companies through the USITA channels.

The benefits to be derived from the elimination of the flashing signals are considered as substantial.

Special toll trains are no longer essential although some companies may elect to use them for local operating advantages.

The way is opened for including many existing offices in the toll dialing network for inward operator and customer toll dialing without the expense of adding the flashing signal features.

Inward dialing to PABX systems is now possible, since local type switch trains can be used for completion of toll calls. This service can be attractive to customers as well as to operating companies by saving switchboard positions and operating staff. Call completion time can be reduced on a large volume of calls which now terminate in important PABX installations. The resultant increase in efficiency of toll plant is an important consideration. Many important users of PABX systems are beginning to study the inward dialing plan and some systems are already in service with a large percentage of inward calls being dialed direct by local as well as distant stations.

Other items which represented future possibilities were not sufficiently firm to justify a general information release.

By way of looking ahead, it may be of interest to outline briefly some of the items discussed but upon which no agreement or final decision has been reached.

(1) *Single Channel Code for Toll Service.* The present codes used by customers to reach the toll operator are not uniform for all systems or locali-

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Extra long receiver KOILED KORDS in color enable you to offer another service to those subscribers who want to move more than four and a half feet from their instruments.

New, long KOILED KORDS retractile cords in color — and in black — are offered in two standard lengths, 18 inches retracted that extend to approximately 9 feet and 30 inches retracted that extend to 15 feet.

Extra long receiver KOILED KORDS are available in colors to match all telephones. See your telephone supply house for full information.

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KOILED KORDS, the original retractile cords, are the result of 17 years of research, development and use.

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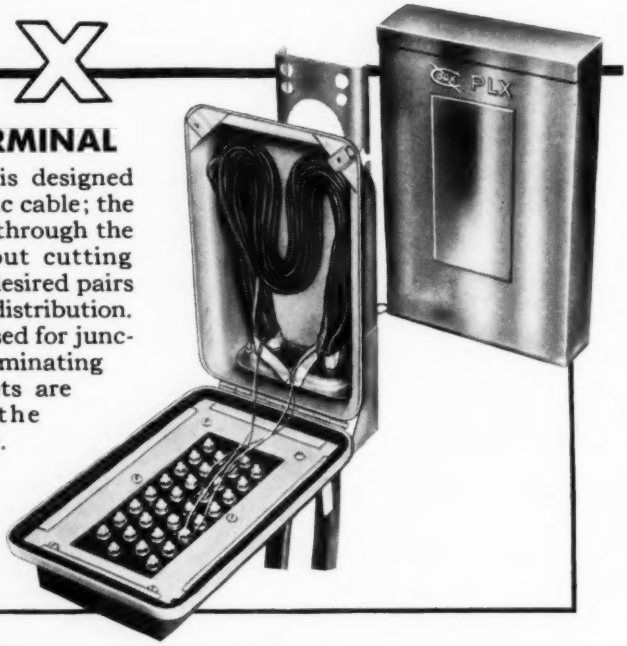
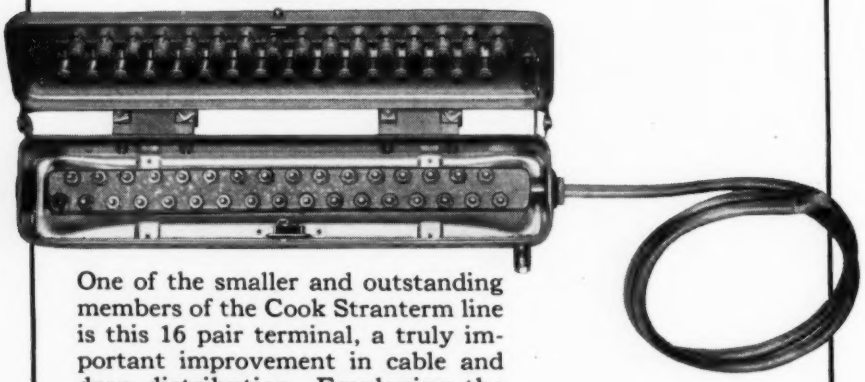
CABLE TERMINAL

This terminal is designed for use on plastic cable; the cable is looped through the terminal without cutting wires, and the desired pairs terminated for distribution. It can also be used for junctioning and terminating cable. Grommets are used to seal the cable entrance. When ordering, specify cable sizes. Catalog No. 452-1116



Stranterm

CABLE TERMINAL



One of the smaller and outstanding members of the Cook Stranterm line is this 16 pair terminal, a truly important improvement in cable and drop distribution. Employing the same excellent design features as the 26 pair Stranterm, this smaller unit is a great asset for improving old and developing new outside plant systems.
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ties. Such codes as "0," "110," and "211" are now in use. An objective of a standard code "0" has been considered for all toll services requiring an operator's assistance. Our committee sponsored a proposal that the code "0-X" be used as an access code to operators as well as to automatic toll ticketing equipment. "0" only would alert an operator and if the "0" were followed immediately by another digit "x" (representing any digit) the call would be processed by automatic ticketing equipment. The proposal received careful consideration as a future possible procedure.

(2) *Expansion of Area Codes.* The growth of toll traffic from more and more dial offices has begun to exhaust the available supply of code numbers (X1X) or (X0X).

A possible solution considered is for use of codes such as (1XX). Should such codes be adopted, some present installations of automatic toll ticketing equipment will require modification so as to recognize such codes as area codes. Decision is left for the future.

(3) *All Number Dialing.* The present limitations of the use of 2-letter, 5-numeral directory numbers are such that only about 500 offices can be assigned in one toll area. Relief from this limitation has been considered by using seven numerical digits as directory numbers. A trial installation in Wichita Falls, Tex., has been announced by the Bell System. The plan will not be generally adopted until results of the trial have been evaluated. If the plan is successful, the number of offices in any toll area could be increased considerably and thus reduce the necessity for use of more area codes.

We were able to present some facts which will have a bearing on the final decisions on questions which may affect Independent operations. The committee will be kept informed of technical or operating changes which may occur and will promptly transmit firm decisions.

The DDD art is in a state of growth which involves some experimentation. So long as the changes are sound and represent economic, as well as technical progress, it is our feeling that the industry will cooperate.

We desire to express appreciation to the USITA for an opportunity to serve on this interesting assignment. We also very much appreciate the complete cooperation of the technical representatives of the AT&T company who have been our contacts.

Battle Against Inflation

"If they (management and labor) don't co-operate, it is reasonable to suppose that inflation will be with us for a long while and will lead to unemployment and lower profits. As citizens as well as businessmen you should use every influence to encourage public policies which are anti-inflationary even when it hurts." — WALTER WILLIAMS, *Under Secretary of Commerce.*

TOLL TICKETING

Continued from page 57

switching network in the United States, proper transmission levels will be maintained. Considerable information is available from the Bell System relative to the via net loss factors, which when multiplied by the circuit length give the via net loss over which each circuit can be operated. It is important that the switching equipment in the toll center be designed to meet these via net loss requirements. This includes the use of switching pads and simplex dialing trains.

(6) *Coin Telephones.* It is not possible to complete calls on an automatic basis from the coin telephones, for obvious reasons. So that these calls can be prevented from completion, it is necessary to block access to the ticketing equipment. Where prepay trains are established, this is a relatively simple matter, but postpay operation presents a more complicated problem. In the case of operator identification ticketing systems, it is possible for the operator to reject calls placed from a postpay telephone by the provision of a tone which will advise the operator that the call is from a coin phone. The use of a distinctive number for coin telephones can also be of assistance in helping the operator to identify such calls and reject them.

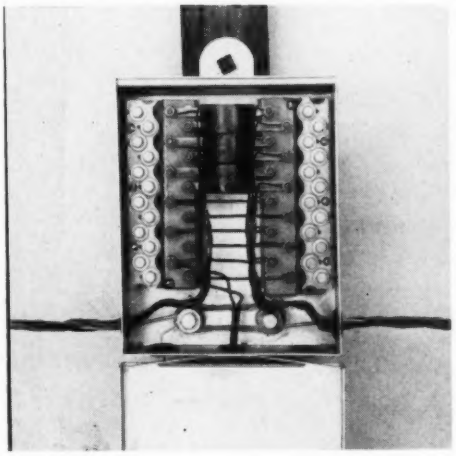
(7) *Peg Count Equipment.* Your traffic people will be interested in the volume of traffic through the various components of your ticketing equipment and it is, therefore, necessary that your equipment be so designed that it is an easy matter to make these determinations at key points in the ticketing system.

(8) *Centralization of Functions.* With the installation of ticketing equipment in more than one exchange, it may be desirable to centralize traffic and other functions, including the handling of information service and repair service. With the establishment of DDD trunks from outlying CDOs, it is a simple matter to make dual use of these trunks to carry the information and the repair service calls to a central point, which may make for more efficient over-all operation and more satisfactory service to the customer.

(9) *Alarms.* Your ticketing should be provided with sufficient alarms so that the maintenance forces can easily determine the source of any trouble that arises.

(10) *Routining Equipment.* You will want to consider a test desk or some other means whereby the ticketing equipment can be routined from a central location on a regular basis. The

HERE IS OUR . . .
Type 177
TERMINAL LOADING CASE



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Cast aluminum combination terminal box and housing for loading coils. Designed to be used for rural distribution wire for 6, 11 and 16 pair capacity and available in 8 types to meet your requirements. Terminals are available with or without protectors and designed to accommodate loading coils of 88 MH or 44 MH inductance.

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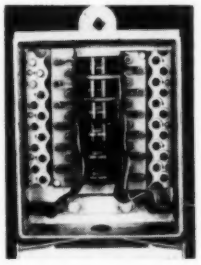
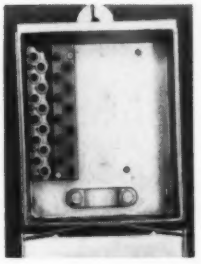


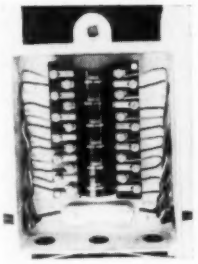
Contains two protected terminal strips complete with type 637A(88MH) or 637 B (44MH) coils.

Type 177F



Contains one protected terminal strip —no coils.

Types 177C-177D



Contains two non protected strips complete with type 637A(88MD) or 637B(44MH) coils.

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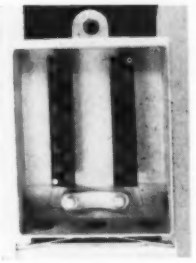
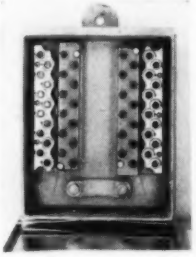


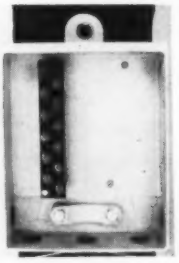
Contains two non protected strips — no coils.

Types 177E



Contains two protected terminal strips—no coils.

Type 177H



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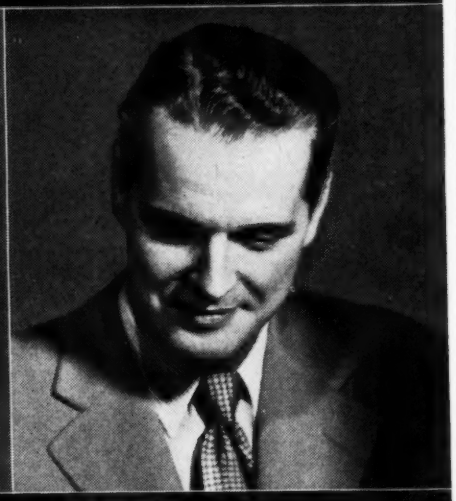

MORE for the operator
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The New Comptometer Customatic gives you everything you've learned to expect from Comptometer—plus these 3 new features.

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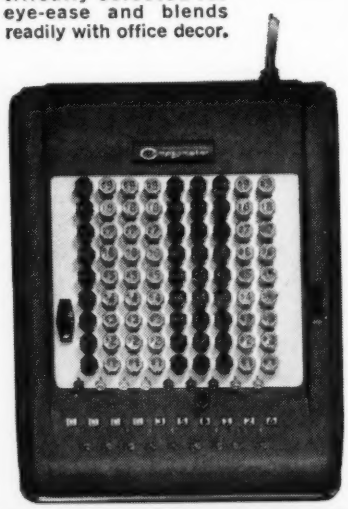

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Let us prove this in your office FREE.

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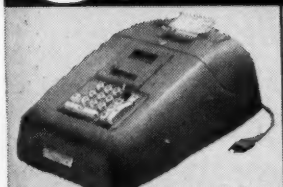

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test desk should be designed in such a manner that a maintenance man can quickly determine and accurately check where the equipment has failed. This is usually done with a panel of lights, which can be read by the maintenance man, or it can be accomplished by the use of equipment which will supply the necessary information in the form of punched cards.

(11) *Power.* Not to be overlooked is the drain on your power equipment that the ticketing system will impose. You will also want to consider your situation with respect to emergency power availability in the event that the normal power supply is lost. Here, again, your emergency power system should be adequate to handle your anticipated load.

(12) *Future Flexibility.* If you should start in with something less than automatic identification of the calling number and anticipate that sometime in the future you will want to provide this service, then you want to be sure that the equipment you purchase can be readily converted to the fully automatic identification type.

(13) *Access Codes.* Remember our customers. It is very desirable that when you have a requirement for an access code, it be uniform, not only within your own system, but also uniform with the rest of the country. The present standard access code is "112".

(14) *No Charge Calls.* Be sure that your design features provide that no charge will be made for such calls as information, repair service and intercept.

(15) *Toll Trains.* The provision of full toll trains is very expensive and many companies are now providing a modified type of toll train. In many cases, it is possible that calls can be completed over the local train, and calls from foreign areas completed through a simplified toll train, which is more economical than the full toll train.

(16) *Adequacy.* It must be remembered that in the use of automatic ticketing equipment, the subscriber is on his own just as he is in a normal dial office. It is important, therefore, that equipment be provided in all elements of your ticketing system in such quantities that a satisfactory grade of service will be given to any customer placing such a call.

Cut-Overs and Post-Cut-Overs

Traffic Department. Before your system is cut into service, you will want an adequate operator training program. If you are contemplating an automatic identification type, the training will be principally assistance such as giving clear-cut instructions to customers who

ask, expeditious handling of requesting credit for reaching a wrong number, and methods of connection to the terminating information operator. With operator identification equipment, special training of operators in addition to the above is required with particular emphasis on key pulsing of the originating number. The training course should include generous practice sessions while the equipment is being installed. Then, too, your traffic department can help with adequate instruction to your larger users.

Plant Department. Ticketing equipment is new and different from most types of equipment we have been using. It will be found helpful if some of your maintenance force can participate in the installation and testing of the ticketing equipment so that they will have a better knowledge of its functioning. Then, too, it is desirable to set up a formal training program to provide the necessary information to your maintenance group.

Accounting Department. As you approach the time of cut-over, your accounting department must be a full participant in the program so that you can effect a smooth change-over from your present system of billing toll calls to the new arrangement.

Publicity. Obviously, we in the telephone company must be completely familiar with all aspects of the new system, but if we leave our customers out in the cold, it will be all in vain. In developing your publicity program, you will want to enlist the aid of key people in your plant, traffic and accounting departments so that all relevant information can be developed to pass on to your customers. No doubt, you will want to consider the use of such media as newspapers, radio, letters and booklets, as well as personal visits and talks before groups, all with the idea of letting the customer know just what he should do to be a full participant in the new system.

Summary

We have reviewed the steps which are advisable when first considering the possibility of ticketing equipment. We have looked into the more detailed aspects of the design period, and have touched on the problems attendant with the cut-over. If ever there were a program which required careful attention to all details, certainly this is one. We would further recommend that you study the "Notes on Distance Dialing—1956" issued by the AT&T company.

Just as we have seen many changes in the art of telephony over the past years, here now is another one, and it should be a signal to us that we can expect many more in the future. Al-

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Extra-dependable packaged power! Extra advantages, too!

The best "salesmen" for C & D PlastiCell® batteries, you'll find, are the large number of friends these *advanced-engineered* batteries have made among telephone men in important exchanges across the country. C & D PlastiCell telephone batteries give you much more than extremely reliable power. You also get:

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- **Lower costs.** Light plastic case reduces shipping costs . . . total in-place costs.

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Write for complete description and specification in C & D PlastiCell Bulletin T-527

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A logical and economical method of connecting subscriber drops to rural distribution wire running straight through the Cook RDW TAP.

This unit provides a low-cost maintenance test point, and additional drops can be installed without opening splices or installing additional equipment. Size range in 6, 11 and 16 pair capacities.

Protection is optional but can be added later on a pair by pair basis with Cook Minigap arresters.

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POWER CROSS PROTECTORS

5 CIRCUIT

This heavy duty arrester has been developed for telephone protection when there is a joint occupancy of poles by communication and power circuits. It provides a single assembly for 5 circuits requiring only one ground wire. The pigtail leads are precut to correct lengths for convenient installation. Catalog No. 501-50

SINGLE CIRCUIT

The miniature member of the family is also used in the event of contact between the power and communication circuits, in addition to furnishing considerable protection from lightning damage. This protector is furnished with alloy cover, a bracket for mounting and 3 copper wire leads.

Catalog No. 501-40

BUCKEYE TELEPHONE & SUPPLY CO.

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ready there is discussion about changes in the now standard access code; there are already experiments going on with respect to the use of seven digits rather than the two-letter, five-digit plan we now consider standard (this latter aimed at expanding the availability of office codes in an area).

Remember that your USITA is a dynamic, forward-looking organization and is helping you to keep abreast of changes and developments in the art of telephony.

MICROWAVE ENGINEERING

Continued from page 60

have required a total cost of $50,000. The microwave installation was made for $15,000—less than one-third the cost of physical circuits.

Our second microwave installation—linking Sherman, Dallas and Denton, Tex.—it in a metropolitan area where future heavy growth is expected. Our new system here gives us a basis from which we can increase our toll circuits with little additional cost, and it also gives us a basic foundation from which we can extend our toll area operations in the future to other points. It would have been more expensive to use cable or open wire lines for this system because they could not be expanded as easily, as rapidly, or as economically.

At Sherman, for instance, we are initially using 36 circuits, whereas the capacity of this installation is 120. We can use the extra circuits at any time by adding plug-in channel units to the common equipment already installed. Thus it's possible with microwave to get additional channels at a decreasing unit cost after the initial investment.

On the Gulf Coast of Texas, we operate the exchange of Port Lavaca on Matagorda Bay. Across the bay on Matagorda Island is an Air Force installation. The Air Force uses this island as a three-altitude bombing range. The bay is used for shipping and there is extensive ship passage between the mainland and the island. The Air Force needs communications to all outside points. But if we lay a submarine cable 22 miles across the bay, it's going to be quite expensive. In addition, the cable could be damaged by shipping and strong currents. So, microwave is the answer there.

Initial cost isn't our only consideration in providing overwater communications for the Air Force. There are two other important factors which weigh the scales in favor of microwave. First, maintenance would be easier. If there's maintenance work required later, it would be at the two terminals, and not somewhere in the

bay as a submarine cable might necessitate. Second, microwave is more mobile than cable. If the need for communications from Matagorda Island lessens or ceases entirely in the future, we could salvage the microwave equipment more easily than 22 miles of submarine cable plus its associated terminal equipment.

In these three Texas installations—the two already in and the other one planned—there is graphic evidence of some of the advantages of microwave. We know from personal experience that it's best for rugged terrain, for over-water hops, and for areas of rapid growth. And, we believe that it is easier to maintain, can be expanded both rapidly and economically, and is more mobile. It requires no right-of-way, and it has the flexibility of providing either a small number or a large group of circuits.

In stressing the economical aspects of microwave, I do not want to convey the impression that it is something for which you should go bargain shopping. When looking for microwave equipment, look for the best—not the cheapest. For, in the long run, cheap equipment will actually cost more. With microwave, quality does not cost—it pays.

In selecting your equipment, you will want to deal with a company that knows the telephone business—one that recognizes the importance of toll-quality and makes telephony its specialty, not just a sideline. Some microwave equipment is designed for all sorts of situations; it will be sold to anyone who comes along with the idea that he wants a radio system—for private or common carrier use. And, then there is equipment designed specifically for telephone toll use. That latter equipment is the kind you will want to consider most seriously.

You don't need a staff of radio experts today to begin using microwave, nor do you have to disrupt your schedules or hire special people to install or maintain an installation. It's now possible to get an entire system on an EF&I or "package plan" basis. You can contract for your microwave system to be engineered, furnished and installed completely — and even maintained, if you so desire. The entire job—from the time initial surveys are made, until the system is in and turned up for service —is somebody else's responsibility. This, in most cases, costs less than doing it yourself. And, it leaves your own engineers and construction crew free for other tasks. We used this EF&I service on our recent installation between Sherman, Dallas and Denton.

There are a lot of maps and charts

American Beauty

12-VOLT BATTERY OPERATED SOLDERING IRON

Are YOU faced with soldering problems concerned with field servicing? Microwave equipment — multiple circuits — point-to-point radio — community TV antenna systems — electronic components on telephone or telegraph lines — instrument repairing? If so, the "American Beauty" T-12-B provides the answer for fine, precision soldering in the field — OR ANY PLACE where a 12-volt battery supply is the only current source.

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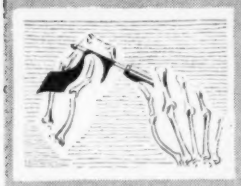

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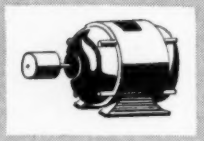
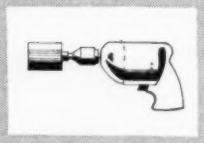
Fits electric motor with ½" shaft or can be used with either ¼" or ½" electric drill.





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I could show you, but time doesn't permit. However, in closing I want to discuss briefly what four Independent companies have done in one state.

In *Fig. 2*, you will recognize Florida, not Texas. It may be news in itself when a Texan brags about another state—particularly Florida. You have perhaps heard or read about the microwave systems that have been put into

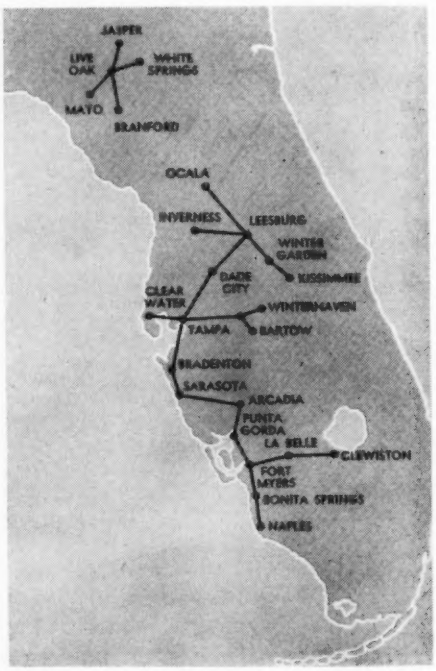

Fig. 2

service in Florida during the past year by four Independent companies: Peninsular, Intercounty, North Florida, and the Florida Telephone Corp. These systems all operate in the 890-940 megacycle band and serve the key cities shown on this map. There already is more microwave in use by Independents in Florida than any other state, and I understand that additional installations are planned there.

As a result of putting in the intercity toll circuits shown here, these companies have increased their toll revenue tremendously. And by using microwave, they are getting a greater profit return on toll business, and customers are enjoying the best in transmission facilities. I believe there is an important moral in this story for all Independents. It's this: Look to microwave toll circuits as a means of keeping revenue up and annual charges down.

I have some figures that I believe are interesting and worth remembering. As I mentioned earlier, there now are approximately 75,000 voice-channel miles actually equipped and operating in the 890-940 megacycle band. This radio equipment isn't loaded to capacity in most instances, and it could carry nearly four times the present number of voice-channel miles simply by adding more carrier equipment. Depending on the length of the system and the number of voice channels initially equipped, these radio circuits that are already in have varied in cost from $63 per voice-channel mile to a maximum of $200 per voice-channel mile. When expanded to capacity, some of these microwave systems will be providing circuits at a cost of less than $25 per channel mile. These costs are considerably below the costs of providing circuits by any other means.

We all know that in the years immediately ahead, it may be a little harder to earn a dollar than it has been during the past decade. Telephone service is catching up with the demand. We have to do more selling. Merchandising has assumed new importance in our operations. We can count on microwave to help us in the future when we are called upon to fulfill circuit needs for data transmission, closed circuit TV, mobile services, and various types of new local services.

But, we don't have to wait for the future. Right now we can utilize microwave in improving or adding to existing toll facilities. As has been done in Florida, we may be able to put in new toll circuits that will mean a new source of revenue. The engineering and economic aspects of microwave offer new engineering and economic opportunities for all of us.

CONTINUING EDUCATION

Continued from page 61

objective. This is a chance to get on top of the hill where you can see the entire pattern of the valley below.

I have a standing offer to make to any of you who has any single customers who use your services because of their personal affection for your company. They are your customers because they have a desire or need for your services and can afford to pay. That is all we have to do to stay in business. Give the customer good service at less cost and we increase our market. The way to do this is to cut down our costs. One way to cut down cost is to operate more efficiently. Adequate training improves efficiency. That in my opinion is the primary objective of the whole of our educational programs.

Our past conference contained six major segments:

(1) Fundamental economic concepts.

(2) Cost considerations in engineering decisions.

(3) Engineering fundamental plans.

(4) Operation analysis.

(5) Communicating engineering decisions.

(6) Technological horizons.

The details of these you will find in your brochure. When I first looked over the course, my observation was that at last here is a chance for an engineer to find out what things cost. Here we could put a dollar sign on every dream cloud. You see, I have always thought that engineers made the poorest managers in the business.

After studying these courses, it became evident that it was management's errors that were reflected in the engineering. The engineer did a good job with what he had to do with. If nothing else, the telephone engineering management conference will bring about a mutual respect and understanding between engineering and management. This will give all of us better cooperation to improve coordination of men, materials, and money. This is the key to our objective.

Now, to the question of who should go to these conferences. Let me say that everyone in the business should go. If you have any desire to improve yourself, go. Give this a few minutes of thinking. Your job is secure so long as your company prospers; and you, through your work, contribute to that prosperity. What better approach is there to securtiy than your knowledge and skill. That is why I say these telephone engineering management conferences are opportunities knocking at your door. Here is a plan to help you to help yourself. Your companies, both large and small, can and will pay you more if you can do a better job. This also applies to the small operator who is his own boss.

In reading the brochure, you may feel that you need a couple of degrees before you can keep up with the course. Not true. The brochure indicates who the program is designed to help. I would venture to say that if you still remember half your high school education and had any experience at all you would get value received from the course. The instructors at the conference are intelligent enough to teach the courses at a level you can understand. Michigan State University is to be commended on the quality of their instructors.

Go to these conferences, men, and find the answer to your prayer—"Lord, help me to know myself, help me to know other men. Help me to do those things I can do, to leave alone those things I cannot do, and Lord help me to know the difference."

NEW,

IMPROVED DESIGN!

Extended mounting slot now fits ALL standard 12" or 8" pin spacings . . . eliminates costly re-boring.

Case® ALUMINUM CROSS-ARM TRANSPOSITION BRACKETS.

Many new carrier circuit designs call for a reduction in wire spacing from 12" to 8". Normally this means thousands of new pin holes must be bored . . . an expensive and time-consuming job. Now . . . the new, improved Case cross-arm transposition bracket with the extended mounting slot fits all standard 12" or 8" pin spacings . . . eliminates the need for costly re-boring, and saves you thousands of dollars per year. If you are planning to re-space and transpose wires from 12" to 8" spacings, be sure to check first with Case.

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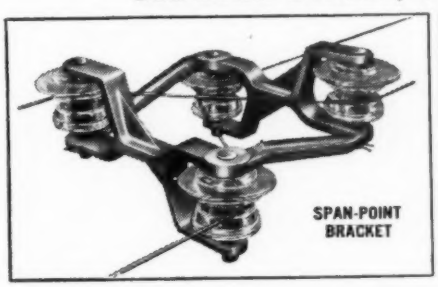

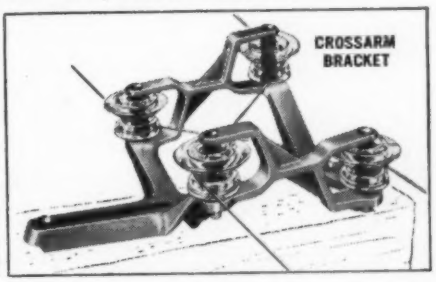

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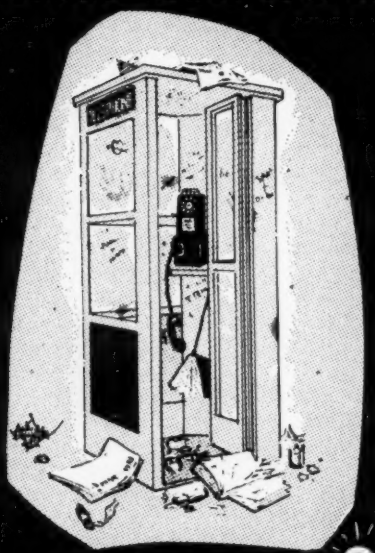

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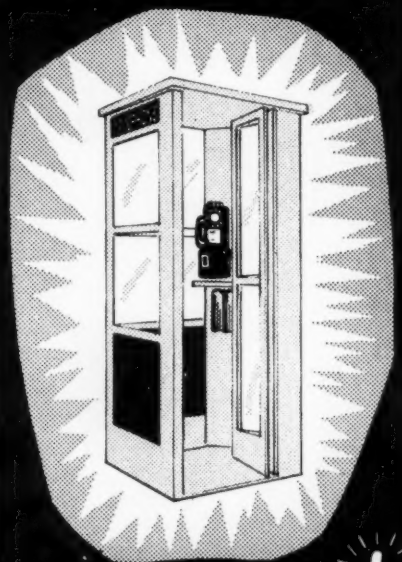

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TAKING A FORWARD LOOK

Continued from page 70

a new attitude toward capacity in relation to demand. Many industries deliberately overbuild in terms of current demand for their products and services. They find this serves as an incentive to market their output and reduces long-term construction costs. As an industry, we frequently underbuild, not realizing that there are penalties for under capacity as well as unplanned overcapacity.

Merchandising also involves an entirely different concept of usage than we have held in the past, for it suggests that one of the soundest approaches to greater telephone development is through increased usage. In other words, it is obvious that the more frequently a person is inconvenienced by having to walk from one part of the house to another to answer a telephone, the more likely he or she is apt to recognize the need for additional telephones. This being so, shouldn't we strive to increase the number of times our customers use their telephones so that we increase the chances that they will have to walk to answer the telephone? Before you say "yes," let me remind you that if we increase usage, we must also increase central office trunking capacity which we have historically kept at a minimum.

Merchandising means abandoning the idea that we hold a tight monopoly on the provision of an essential service. Admittedly, we have an exclusive operating franchise, nevertheless, there are vulnerable edges that can be nibbled away as evidenced by the number of private PABX's that are sold outright to our subscribers. It seems to me the recent "Hush-A-Phone" decision will very likely pave the way for further direct sales competition in the future.

Full acceptance of the concept means that we must be willing to accept certain risks that we have not heretofore been willing to do. We cannot overbuild demand nor increase inventories, for example, without increasing our operating costs. There can be no immediate guaranteed return when this is done. It must be done as a calculated risk based on careful but bold and imaginative planning for profits.

These are some of the changes in management thinking that I think are involved in full acceptance of the merchandising concept. And, if you will consider for a moment what these changes would mean to your operation, I think you will agree that the concept really represents a fundamental change in operating philosophy.

Finally, I would like to say that I

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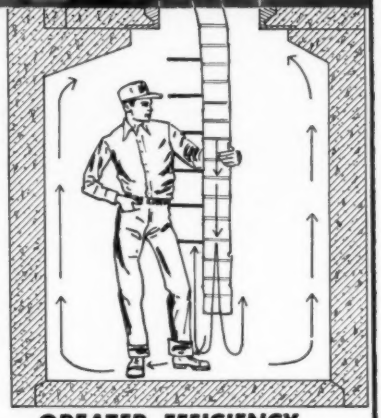

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think the prime requisite for a successful merchandising program in any company is *vision*. The hallmark of wisdom is the ability to foresee with at least some degree of clarity and confidence the needs of tomorrow and beyond tomorrow. Yet, it is all too easy to become preoccupied with the day-to-day barometers. Far too often our noses seem to be buried in daily reports, monthly inventories and the charts of current fiscal performance.

Ladies and gentlemen, I'm convinced that the opportunities for merchandising in the telephone business are extraordinary, but I think that in the past few years we have been so interested in "catching up" that we have failed to see many of these new opportunities in time to take full advantage of them. And, unless we stop every now and then to take a "forward look" and attempt to visualize some of the needs of tomorrow, I think there is a very real possibility that new opportunities will continue to catch us unawares in the future.

INDUCED NOISES

Continued from page 101

almost always be noted but, if the office equipment is well balanced, the short could almost completely eliminate the noise. Moving this short from the equipment side of the protector to the line side will detect heat coil unbalances or poorly soldered connections by the increase in noise when the short is beyond the trouble.

(2) While still listening at the office, move the short to the cable terminal. If the noise is eliminated by this short the unbalanced condition is beyond the short.

(3) The above procedure can then be followed in sectional tests on the open wire to secure an approximate location of any single situation, such as a ground on the line or a high resistance joint. If the cause of the noise is lack of proper transposition or scattered tree grounds, a gradual increase in noise will probably be noted as the short is moved farther out on the line. The man who applies the test shorts should, of course, observe line conditions and transpositions as he progresses along the line.

(4) If the line remains noisy after all tree grounds, high joints, and other obvious troubles have been eliminated, the need for transposition can be determined by removing all drops from the line, opening the line at the cable terminal, and listening on the open wire alone. It must be remembered that the procedure being outlined is an elimination process, which makes it necessary that each condition must be cleared when found before the next step in testing is taken.

(5) Listening tests should then be continued on the line as the various stations are reconnected, since it is possible that unbalanced conditions or trouble existing at any given station could be responsible for the noise. In

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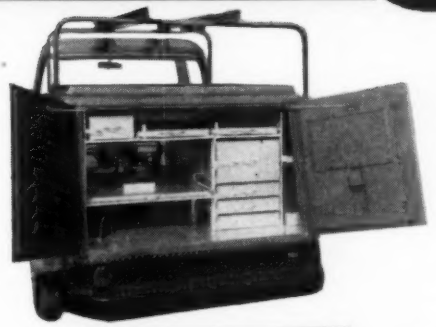

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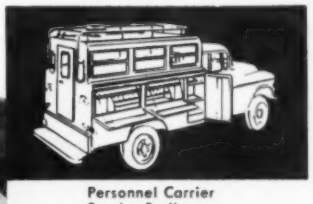

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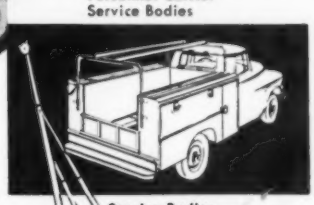

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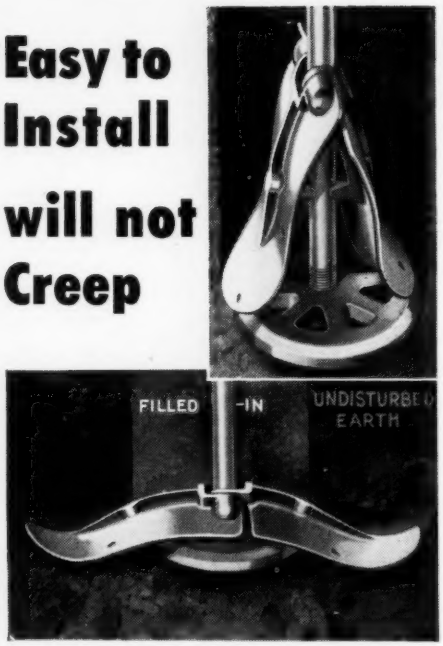

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cases where selective ringing to ground is employed, it may be noted that a sharp increase in noise level will occur when the first station is connected, and that the noise level will vary either upward or downward with the connection of each subsequent station. Where this type of ringing is used it is important that all ringers be of as nearly identical impedance as possible, and it is highly desirable that the same number of ringers be connected to each side of the line. In some situations where high induced voltages are present on the telephone line, it may be necessary to add a dummy ringer to balance the line. The newer high impedance ringers now available are of considerable help in this type of situation.

Some skill and judgment in interpreting results of listening tests can be gained only by experience, since the application of the short always makes some change in noise even when it is beyond the cause of the line noise. This is especially troublesome when noise is caused by more than one situation.

When superimposed ringing or semi-selective code ringing to ground is employed on multi-party lines, noise due to ringer unbalances can often be satisfactorily reduced by the substitution of cold cathode tubes for the series condensers in the ringer circuits. Some complications may result from use of these tubes due to characteristics of the ringing trip circuits, especially in automatic exchanges. Use of cold cathode tubes with harmonic ringers has generally proven unsatisfactory due to serious reduction of ringer volume.

Another situation quite often encountered in telephone plants is that which involves a sudden increase in ringing induction, noise, and crosstalk, on many lines in a given exchange. This type of situation quite often results from the development of high resistance in the central office ground. Such a condition can, of course, also be the result of cable trouble. Moderately priced instruments are now on the market for checking ground resistances, and the use of such an instrument for checking both office and protection grounds will repay its purchase price many times over by improvements in both noise and protection of the plant itself. With regard to inductive noises originating in the central office equipment, it is apparent that adequate routining, together with maintenance of good central office ground, will avoid the occurrence of most of this type of inductive trouble.

Another type of problem has recently arisen with the use of plastic sheath plastic insulated cable. In this type of cable the shield, which is usually composed of a spiral wrapping of rather

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thin metal, either aluminum or copper, has substantially higher resistance than the larger cross section lead sheath formerly used. As a result, the resistance of the shield itself causes a decrease in the effectiveness of the shielding on the pairs in the cable as the distance from the nearest grounding point increases. This is especially noticeable in cases where long runs of the plastic cable are originally grounded only at the central office.

In one such instance, a plastic sheath cable approximately 5 miles in length was excessively noisy on all cable pairs until grounds were placed at the end terminal and at a small number of locations between that point and the central office. In this type of construction, the normal grounding of the messenger through uninsulated down guys is not transferred to the shield because of the insulation afforded by the plastic sheath.

In placing this type of cable, it has been found desirable to bond the shield to the ground posts in each terminal and in turn to bond these posts to the messenger. In most cases, a good ground will also be required at the end terminal, and it may be found necessary to provide other intermediate grounding points to secure satisfactory noise reduction.

In closing, it should be stated that a small percentage of the cases involving induced noise and crosstalk do require analysis by trained personnel using rather expensive instruments, but the application of simple testing procedures together with a small amount of knowledge concerning the basic causes of induced noise and crosstalk will produce satisfactory solutions to a large majority of our inductive coordination problems. Every possible effort should be made to see that our telephone plant is in satisfactory condition before a coordination problem is taken up with either the power company or a specialist in such matters. This applies to the entire telephone operating industry whether it be a small company operating in only one exchange, or a large telephone company which maintains such specialists on its staff.

Personnel Management

"The great costs of training and developing personnel demand a definite program for the retention of trained employees. . . . We have definitely entered the era when the demands in this area will place a greater responsibility for creating ways and means toward better management of people."—EARL P. STRONG, *director, College of Business Administration, Pennsylvania State University.*

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WHO, WHAT, WHEN OF EQUIPMENT MAINTENANCE

Continued from page 104

equipment routining, we would get in the neighborhood of 100 different answers. So I'll not be a bit surprised if many of you do not agree with all that follows.

As a starter let me say that I believe there to be two extremes on almost any type of routining—and neither is always correct. There is the routine that is done so frequently that the equipment is literally worn out from the routines—not from the service that it renders. If you decided to check the starter of your automobile every hour to be sure it is in good working order, the starter might be able to survive; but the battery would get tired and quit long before it should have.

And, the other extreme of routining is that scheme which doesn't. One type of equipment comes to mind which may do better with practically no routine checks at all. Some of you have probably heard of or had experience similar to the story coming out of World War II. Because electronic tubes were in short supply and they couldn't be replaced anyway, a number of routines which called for periodic testing of such tubes were either spaced much farther apart or eliminated entirely. Two results are quite interesting—for one thing, tube life was considerably extended, and for the second, the number of equipment failures due to tube failure was reduced.

There are those who believe the concept of minimum of routine should be carried over to include practically all equipment items. Whether or not you or I agree may depend upon that word "minimum." I was interested in reading a report two or three years ago on this matter of minimum routining. One of the major points made was to the effect that many telephone equipment items are routined much too often. In support of this contention were experiments involving a number of men trained in the mechanical adjustment of the equipment. They often couldn't tell whether a component needed adjustment or not, whether or not it had been in service during the "standard" period between routine readjustment. I can reach at least two conclusions from this report—either the equipment adjusters were not the experts they were supposed to be, or else the equipment had not strayed very far from the accepted limits. I am inclined to accept the latter part.

Now, I supposed the danger in going too far on a "minimum" routine program is that pretty soon we reach a point where service starts to become impaired. I learned of one case about two months ago in an operating company (which shall remain nameless) where a trouble complaint may have been the result of carrying "minimum" routine maintenance too far. I don't know that that was the case, but the symptoms seem to fit.

As I understand the case, it started with a businessman who had been required to change telephone numbers. He was justifiably interested in seeing that his old number was properly intercepted as he had been told it would be.

After the number change he tried his old number to test the intercept and got a busy. Repeated trials gave him the same result. Knowing the telephone company vice president, he called the VP and told him his story and asked, "What kind of service is that?"

The vice president got ahold of whoever was supposed to fix such things and asked the same question—"What kind of service is that?"—and let's please fix it!

Vice presidents and general managers usually get paid attention to when they ask these embarrassing questions. And that was the case here. A man dispatched to clear the trouble found a connector locked up on the terminal of the complaining friend of the Veep. Apparently the first time that this connector was used to call the intercepted terminal, one of its relays which had no business operating from a resistance ground did so, and the lock up on the terminal resulted. A routine check of the relay adjustment any reasonable time—and I'll go out on the limb to say a year or so—before would have stood a good chance to prevent this service complaint.

We do not have sufficient time to explore in detail the many types of equipment routines that are related to this problem. It is my conviction that some of us may have a way to go before we reach the ultimate in efficient maintenance. It may take some experimenting. Just because you may have established a routine schedule that keeps your equipment working to your satisfaction does not necessarily mean it is the most efficient schedule. If your schedule is on the heavy side, how do you know until you have tried it that you couldn't get along on half as much. Maybe your routining is on the minimum side. Unless you have tried it, how do you know but what a stepped-up maintenance program would reduce your service complaints enough to be worth the extra cost? It seems to me

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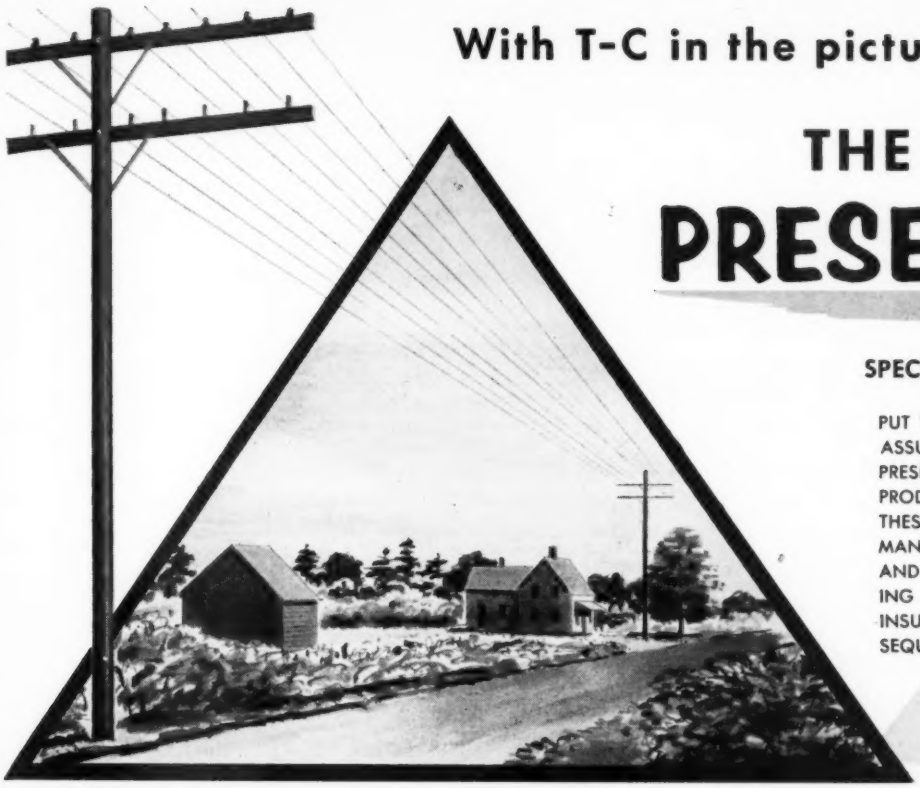

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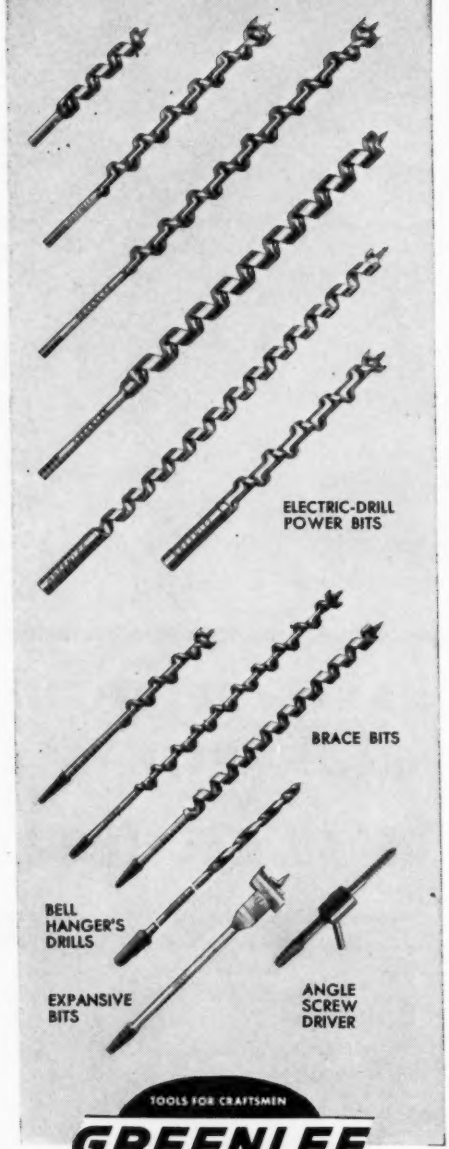

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Greenlee Tools Co., 2070 Columbia Ave., Rockford, Ill.

that in either case it is worth a little deviation from what we've been doing —just to convince ourselves we are right or (horrors) to discover we've been wrong all this time!

USITA TRAFFIC COMMITTEE

Concluded from page 112

requires the operator to remain on the line on such calls, until ringing starts or an audible busy or some other audible report is heard. This practice will, in some ways, render more personalized service, but also requires more work time. It is conservatively estimated that the additional work time will be .4 units per attempt on station-to-station calls where the operator previously relied on visual supervision. The same additive is necessary on inward attempts where the local office does not return visual supervision. The one compensating factor is that we will be able to dial into many more points and, with the advent of customer toll dialing, the percentage of operator handled station-to-station calls will decrease.

We have touched briefly on some of the more noteworthy developments, and contemplated our responsibility in the nationwide integrated system. In wishing the association of our industry many and happy fruitful years ahead on its 60th birthday, let us remember that wishing alone will not make it so.

Let us, therefore, pledge our support, share our responsibility, and work together in the spirit of service established by our pioneers.

OVER SIXTY IN TRAFFIC

Concluded from page 118

screened very carefully in the future. She should have higher educational background than her predecessor, she must be trained to a more extensive degree in telephony. The supervisory personnel and the operating personnel will be required to have a better knowledge of the equipment which is working for them. Telephone officials and planners are predicting an astonishing future for the telephone industry. Electronic development has hinted at (1) transoceanic DDD, (2) telephones in every room of the house (with or without the use of hands), (3) radio telephones to be carried in your wearing apparel, and many others too numerous to mention. All of these possibilities of the future promise more and more complexities in traffic. Those of us who will be charged with responsibility of training tomorrow's supervisors had better look well to today's selections.

Traffic over 60 is indeed a challenge as the future has been to all before us. The experience of the past should be useful for tomorrow's problems.

The story is told about a field force of engineers who were determining the location of a bridge over a small stream. It seems there were very few records available to help them in determining maximum high water levels, so they inquired of an old-timer if he could help them. The old-timer obliged them with the information they wanted by driving a nail at a certain place in a tree alongside the bank. When asked how much he wanted for his services he replied the bill would come to $50.10. The engineers were elated to receive the information, but were curious about the odd amount of the charges. When asked to explain, the old-timer replied, "Well, I reckon you owe me 10 cents for the price of the nail and $50 for knowin' where to put it."

The responsibilities for telephone planners are tremendous. I believe it was Herbert Spencer who said: "When a man's knowledge is not in order the more of it he has the greater will be his confusion." It is my hope that as we in traffic go "beyond 60" with a pace that promises rapid acceleration, we will find our knowledge in order and that perhaps we can, like the old-timer, know where to drive the nail.

Gustav Hirsch Recovering

Gustav Hirsch, president of the Gustav Hirsch Organization, Columbus, O., and a member of the Ohio Independent Telephone Association board of directors, is recovering from a heart attack which he suffered in Warren, O., during late August while attending a meeting of the board of directors of the Warren Telephone Co.

Mr. Hirsch, who is president of the Warren Telephone Co., was stricken while en route to the company's offices. His condition currently is improved.

To Manage Illinois Company

W. C. Drysdale, president of the Eastern Illinois Telephone Co., Rantoul, formally announced the appointment of Marvin A. Johnston, as general manager of the company, on Sept. 26.

Principle of Growth

"People in business grow mainly from the jobs they are assigned to do and the way they do them. Delegation provides the route for men to grow to higher responsibilities. But to recognize this is just the first step in encouraging a man to grow."—CLEO F. CRAIG, *chairman of the board, American Telephone & Telegraph Co.*

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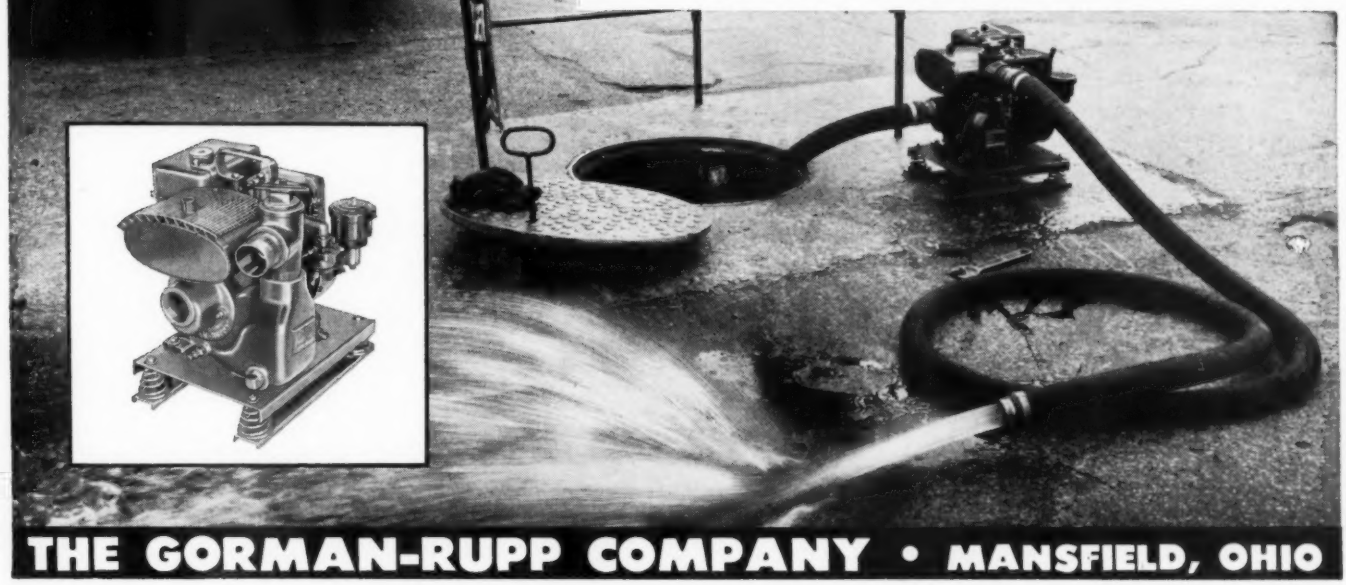

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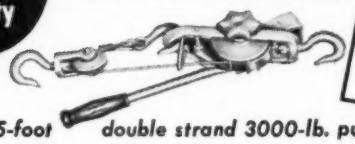

5-foot double strand 3000-lb. pull

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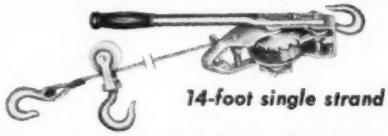

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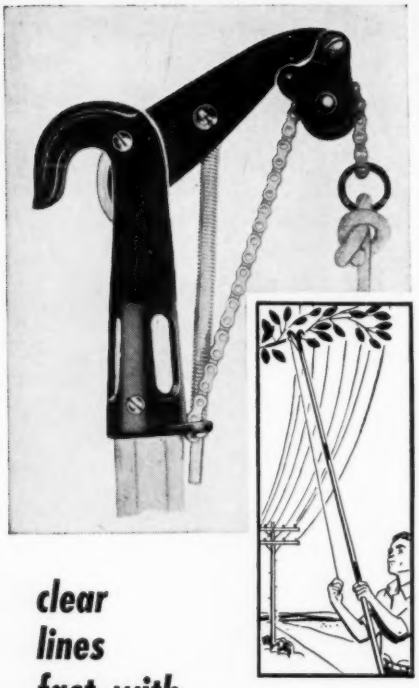

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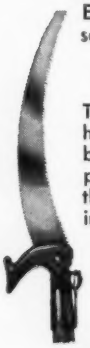

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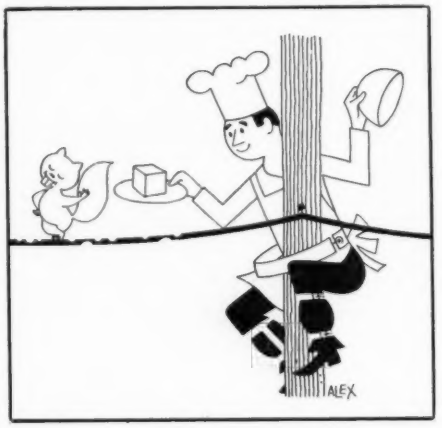
Squirrels Gnaw Way to High Overhead, Says Illinois Bell

SQUIRRELS ARE "putting the bite on," says a news release Illinois Bell Telephone Co. recently sent out to acquaint the public with one of its worrisome problems.

Illinois Bell's explanation of its number one headache—a familiar one to many Independents, provides a few incidental chuckles. Says the release:

"The little rodents with the big teeth are Public Enemy Number One to Illinois Bell Telephone people. They cause more trouble than the playful fellow who calls and says, 'Bet you can't guess who this is?'



"For some reason, known only to themselves, squirrels take great delight in nibbling on the lead sheathing of telephone cable. Once this protective covering is pierced by small molars, moisture finds its way inside. A short circuit develops and telephones may go dead.

"Repairing such damage costs the telephone company several thousand dollars every year. And, since they're pretty proud of their reliable service, non-operating telephones are a pretty nasty blow to their professional pride.

"In an effort to get their teeth into the problem, telephone people enlisted the aid of the Department of Wild Life Management of the University of Massachusetts. For almost six years graduate students studied the proposition.

"Less cultured minds, of course, might suggest such direct remedies as gun shots or poison. Firearms were naturally eliminated since not every telephone man is a sharpshooter. And, further, the lineman is a hero to the small fry, and telephone officials didn't want his glamour tarnished by having him ticketed as a fellow cruel enough to shoot squirrels. And you can't label poison for squirrels only. Children and pets could be expected to nibble at any potion set out for the rodents. And the telephone company had no desire to become a neighborhood Borgia.

"So the job was turned over to professionals.

"There was a theory that only pregnant squirrels did the gnawing. Their taste for lead, some thought, was akin to that of the human mother-to-be who demands pickles and strawberry jam at 4 a.m. Just what telephone people should do to keep squirrels from being pregnant, they didn't say.

"Dietary deficiency, said another school of thought. The squirrels attacked the lead for its salty content. Telephone men should provide blocks of salt on poles and the cable would be safe. The telephone companies hopefully set up aerial free-lunch stands. The idea went over big with squirrels who found salt an ideal appetizer before a meal of cable. Some researchers said habit; some said gnawing offered an ideal dental treatment. The squirrels said nothing, but continued gnawing.

"The researchers finally concluded squirrels gnawed just because they enjoyed it.

"Telephone people tried putting metal shields around poles and cable where squirrels were numerous. That kept them away until they learned the trick of ambling down the street to poles without guards, climbing up and gnawing their way back home along the cable.

"Coating the cable with an asphalt paint which included sand and small glass beads worked pretty well. But this was expensive and the coating wore off in a few months. Some squirrels took a small taste, scraping off enough paint to give the next arrival a clear shot at the lead.

"The only 100 per cent effective remedy, the telephone company found, was to wrap the cable with a "hardware cloth," which has a wire mesh. This will daunt even the most resolute squirrel. The only drawback is cost.

"This all leaves the bushy-tailed beasts in a pretty good spot to drive telephone men nuts—or squirrely."

Appeal for Thought

"Few minds wear out; more rust out."—BOVEE.

QUALITY DEPENDABILITY PERFORMANCE

EXCHANGE AREA CABLE

Aerial and Duct are R.E.A. listed. Both Aerial and Duct and Direct Burial Cable utilize polyethylene insulation, aluminum shield and high molecular weight polyethylene jacket for top electrical values. Available in #26, #24, #22, or #19 AWG in 6 through 404 pairs.

RURAL DISTRIBUTION WIRE— R.E.A. LISTED

Conductors insulated with high molecular weight polyethylene and jacketed with color coded, weather resistant vinyl provide good transmission values at low cost. Available in either #19 or #22 AWG with 3, 6, 11, or 16 pairs cabled over a high molecular weight polyethylene insulated high strength galvanized support wire.

URBAN DISTRIBUTION WIRE

The rugged weather resistant vinyl insulation over the conductors is fully color coded. This construction, designed for block distribution, serves best where low cost rather than low attenuation is the prime consideration. Available in #24 AWG with 6, 11, or 16 pairs.

ONE PAIR DISTRIBUTION WIRE

A high molecular weight, weather resistant polyethylene extrusion encompasses the parallel conductors. A raised ridge tracer provides polarity identification. The high strength conductors make possible long spans on lateral branches or drop runs. Available in #14 or #12 Copperweld or .083 galvanized steel.

INSIDE WIRING CABLE

Solid, soft drawn bare copper conductors fully color coded with heat resistant polyvinylchloride insulation. All pairs twisted with varying lays to minimize cross talk and cabled to insure maximum flexibility. A tough, water resistant vinyl jacket in either brown or ivory provides good conductor protection for exposed insulation. Rip cord construction prevents damage to conductors in stripping. Available in #24 AWG with 6, 12, 16, 21, 26, 51 or 76 pairs.

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THE REX CORPORATION

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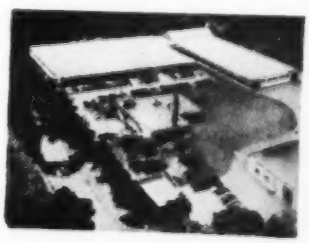
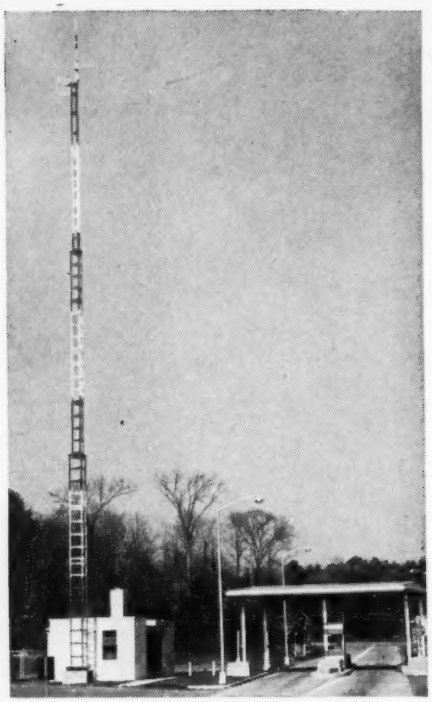


XUM



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- Serves many purposes
- Space-saving uniform cross-section
- Easy to erect
- "Natural ladder" construction affords easy maintenance

Quick, expeditious handling of communications is assured year-'round by this clean, economical and dependable self-supporting structure.

The SC Tower is sturdy, and being free of guy cables is particularly adaptable where land space is at a premium.

Available as straight uniform cross-section for short heights, graduated uniform cross-sections for taller use.

Call or write for details.

Stainless, inc.
NORTH WALES • PENNSYLVANIA

Courts and Commissions

Southwestern States Gains Two Raises in Texas

Two rate increases were granted the Southwestern States Telephone Co. in Texas during September.

A two part increase was granted the company in Giddings (883 stations). Interim rates were effective Oct. 26, while final rates for the common battery exchange will be effective in the first quarter of 1958 when the central office is moved to new quarters and installation of the new switchboard is completed. The old rates, interim rates, and final rates are as follows:

	Old	*Interim*	*New*
Business:			
One-party	$5.00	$5.75	$6.50
Two-party	4.35	5.00	5.65
Residence:			
One-party	2.80	3.25	3.65
Two-party	2.50	2.75	3.25

A rate increase was granted in Caldwell, Tex. (common battery, 739 stations) in connection with a proposal to furnish dial service.

The old, interim and final rates which will become effective at the time of the automatic conversion late in 1958 are as follows:

	Old	*Interim*	*New*
Business:			
One-party	$4.25	$6.50	$8.00
Two-party	3.75	5.50	6.00
Residence:			
One-party	2.75	4.50	5.00
Two-party	2.25	3.50	3.75
Four-party	2.00	2.50	2.75

General of Cal. Seeks $12,511,000 Rate Raise

General Telephone Co. of California on Oct. 9 filed with the California Public Utilities Commission a request for a general rate increase, Edwin M. Blakeslee, company president, announced (TELEPHONY, Aug. 24, p. 48). General of California is asking for adjustments in nearly all telephone rates to increase its revenues by about $12,511,000. After taxes, the company would retain only about $5,700,000 of the total revenue increase.

Mr. Blakeslee pointed out that this is the first general rate increase the company has had since 1951. Some minor adjustments have been made, including an $814,000 decrease in 1956.

"Although our revenues have increased steadily during the past few years," Blakeslee said, "at the same time, our costs of doing business have increased more rapidly."

The principal reasons for the unbalance between income and costs are (1) higher labor costs and taxes; (2) increased costs of basic materials; (3) increased cost of borrowing money and obtaining investment funds.

The company operates in some of the most rapidly growing areas in California, which requires a tremendous construction program to keep pace with the demand for new service. In 1957, expansion will exceed 66 million dollars and in 1958, 74 million dollars will be needed to meet customer needs.

Illustrating how costs have gone up, Mr. Blakeslee said: "In April 1953, the average investment per telephone was $263, compared with $338 in June of this year.

"Like every other large utility concern, the costs of financing our expansion are steadily increasing. The only way the company can cope with rising costs, provide a fair return to investors, assure its ability to attract new capital for expansion and provide adequate service to its customers is to obtain a general increase in telephone rates.

General of California provides service in 125 California communities, has nearly 900,000 telephones and an investment of over 320 million dollars.

License Taxes to Be Passed On to Mo. Cities Levying

The Missouri Supreme Court recently upheld a circuit court decision in a case in which two cities served by Western Light & Telephone Co., West Plains and Mountain View, appealed a Missouri Public Service Commission order that called upon Western to eliminate license and occupation taxes as operational expenses payable from over-all revenues, and to pass on such taxes to the subscribers in the respective cities and towns levying such taxes by means of surcharging Western's bills in the appropriate amounts.

The commission's order (TELEPHONY, Aug. 27, 1955, p. 37) had approved for Western a 6.20 per cent return and an increase in gross annual revenue of approximately $100,000. The increase was to be accomplished by raising rates sufficiently to produce $85,500 in additional revenue and eliminating license and occupation taxes ($14,491.85 for 1954) as operational expenses and pass-

COOL PERFORMER

when the heat's on!

Despite temperature extremes, you can depend on Kennecott lead-alloy sheathed cable to give perfect service! Its exclusive "Young Process" lead sheath and precision-wound tape insulation shrugs off heat damage that would greatly shorten the life of other types of insulation and sheathing. Proof of this is that Kennecott Telephone Cable lines have been giving superior service since 1897. Get full details from the Chase sales office near you.

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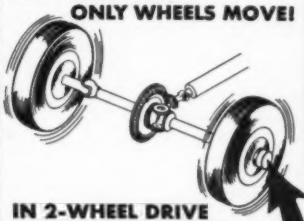
NEW... exclusive AXLE POSITIONER HUB for 4-Wheel DRIVE SERVICE TRUCKS

FREE-LOCK the dependable name for free-wheeling hubs, brings you the exclusive "axle positioner" feature. Engages your hubs instantly regardless of position of the vehicle. No rocking or moving of vehicle under any condition.

FRONT DRIVE WITH FREE-LOCK HUBS

LOW OPERATING COSTS

ALL PARTS STOP ONLY WHEELS MOVE!



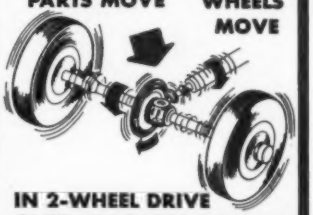
IN 2-WHEEL DRIVE NO PARTS MOVING

FRONT DRIVE — NO FREE-LOCK HUBS

HIGH OPERATING COSTS

ALL THESE PARTS MOVE

WHEELS MOVE



IN 2-WHEEL DRIVE OVER 100 PARTS MOVING —WEARING!

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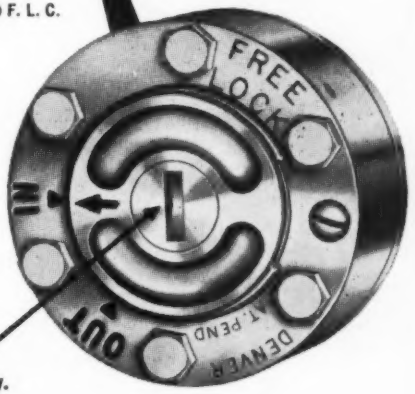

If necessary, a 1/16th inch turn engages hub instantly.

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Cut maintenance costs! Get 2-wheel drive economy, still having instant use of 4-wheel drive when needed.

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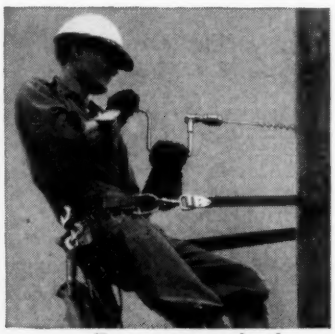
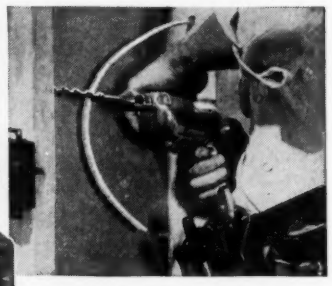
New adapter shank bit

fits either hand brace or power drill



Taper square shank fits hand braces



Cut off taper and use "hex" shank in both power drills and hand braces

Cut your wood bit inventory by 50%

Now you can eliminate the need to stock two types of wood auger bits. Irwin's new Adapter Shank Bit fits both hand braces and power drills.

With hand braces, use the Adapter Shank Bit as it comes. Cut off taper square and the Adapter Shank, with its 6 "hex flats", chucks perfectly in power drills or hand braces, either one. No wobble, no run-out. Clean, efficient cutting action. Reduces inventory and record keeping by 50%. Saves time on the job, too. Call your distributor, or write today for complete information. Sizes 4/16" to 17/16", both solid center and single twist types.

***All Irwin Adapter Shank Wood Bits** are forged in one piece from special steel and heat tempered full length for longer life. Plastic coating on balanced cutting heads guarantees factory-fresh sharpness, unequalled performance. Widely used by utilities, electricians and construction workers.*

IRWIN auger bits • screw drivers

Wilmington, Ohio

ing on such taxes to the subscribers in the respective cities and towns levying such taxes.

Three cities appealed to a circuit court only that portion of the commission order which directed Western to file a general rule providing for the passing on to telephone subscribers residing in a particular municipality the license and occupation taxes levied by that municipality.

The circuit court upheld the commission ruling. Two of the cities then appealed to the Missouri Supreme Court, which later affirmed the lower court ruling.

The commission had reasoned that Western's practice of treating license and occupation taxes as an operational expense reflected in and paid by collections from systemwise rates was unjustly discriminatory to those subscribers who did not reside in a municipality which levied such a tax or who resided in a municipality which levied a proportionately smaller tax than other municipalities wherein Western's exchanges were located. The commission also found that by passing such taxes to the respective consumer beneficiaries for payment, the existing unjust discrimination would be eliminated.

Wisconsin Bell Gains Rate OK on Family Visit Calls

A "family visit" feature is included in the Wisconsin Telephone Co.'s new toll schedule recently approved by the Wisconsin Public Service Commission (TELEPHONY, Aug. 3, p. 35).

The "family visit," which applies to long distance calls within the state, went into effect along with other new toll rates.

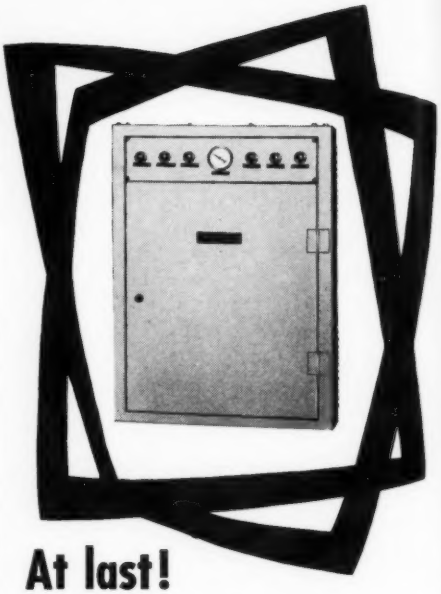
Intrastate callers may now talk 10 minutes for the price of five minutes between 9 p.m. and 4:30 a.m. each night.

The user pays the normal night rate for the first five minutes and is not charged for the next five. Each additional two minutes after 10 minutes is charged for at the one minute rate.

General of the SW Wins Rate Raises in Two States

The following rate increases became effective in exchanges of General Telephone Co. of the Southwest during the month of September:

Memphis, Tex.	*Old*	*New*
Manual—common battery, 1244 stations		
One-party business	$9.50	$12.00
Two-party business	8.00	10.00
One-party residence	5.50	6.00



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leading name in dynamic dehumidification for over a decade, now offers the startling new:

INDUSTROL

Heat-Les* DRYER

A compact, modular desiccant-type unit (complete with compressor and various alarms) which reactivates without heat.

- Provides effluent dewpoints of —100° to —140° F. continuously, regardless of fluctuations in gas or air temperature.
- No heat downstream.
- Reduces installation and maintenance costs.
- Ideal for telephone cable, coaxial cables, wave guides, antenna horns, and all types of electronic equipment.

WRITE TODAY for free information or contact your local Trinity representative.

INDUSTROL DRYERS ARE MANUFACTURED BY

TRINITY

EQUIPMENT CORPORATION

Roselle Park, N. J.—Cortland, N. Y.

*Patent applied for

Two-party residence	4.50	5.00
Four-party residence	3.50	4.25
Clarendon, Tex.		
Manual—common battery, 1105 stations		
One-party business ..	9.50	12.00
Two-party business..	8.00	10.00
One-party residence..	5.50	6.00
Two-party residence	4.50	5.00
Four-party residence	3.50	4.25
Sonora, Tex.		
Dial, 965 stations		
One-party business ..	8.00	10.00
Two-party business..	6.50	8.50
One-party residence..	4.00	5.00
Two-party residence	3.50	4.25
Four-party residence	3.00	3.75
Sherman, Tex.		
Conversion to dial, 9763 stations		
One-party business ..	11.00	12.00
One-party residence..	5.50	5.75
Two-party residence	4.50	4.75
Four-party residence	3.60	4.00
Hallsville, Tex.		
Conversion to dial, 362 stations		
One-party business ..	5.00	9.50
Two-party business..	4.00	8.00
One-party residence..	3.25	5.25
Two-party residence	3.00	4.25
Four-party residence	2.75	3.50
Van Alstyne, Tex.		
Manual—common battery		
One-party business ..	5.00	9.00
One-party residence..	3.25	4.75
Two-party residence	2.50	4.25
Springhill, La.		
Conversion to dial, 2008 stations		
One-party business ..	8.80	10.00
Two-party business..	7.00	8.00
One-party residence..	4.55	4.55
Two-party residence	3.85	3.85
Four-party residence	3.15	3.15
Agua Dula, Tex.		
Conversion to dial, 135 stations		
One-party business ..	6.00	9.50
Two-party business..	4.50	8.00
One-party residence..	3.75	5.25
Two-party residence	3.25	4.25
Four-party residence	—	3.50

Wisconsin Companies Ask To Buy, Raise Rates

The Wisconsin Public Service Commission was scheduled to hear the following cases during the week of Oct. 21:

Application of the Wisconsin Telephone Co. to buy the lines switched at its Oconto exchange for the Oconto Rural Telephone Co. (Oct. 23).

Rate appeal of the Rhinelander Telephone Co. on Oct. 24, and of the Little Sturgeon Telephone Cooperative on Oct. 25.

Tennessee Independent Asks Increase in Rates

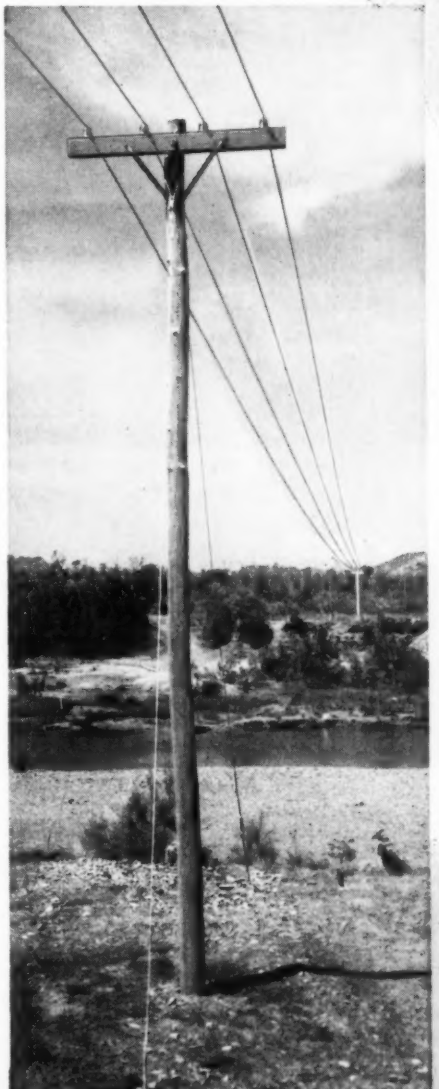
The Tennessee Public Service Commission has approved a petition of R. M. Cantrell, manager of the Riceville Telephone Co. for increases in rates and charges as apply to business and four-party service in that community, it was reported on Sept. 30.

Business rates are being increased

Crapo HTL-195

FOR EXTRA LONG SPAN RURAL LINES

The NEW LOWER Resistance Extra-High Tensile Line Wire



- Better Voice Transmission
- Spans to 600 Feet or More
- Savings in Material and Labor
- Lower Ultimate Costs

Superior voice transmission qualities and extra high physical strength are combined in **Crapo** HTL-195 to provide the most practical and economical of conductors for rural telephone circuits.

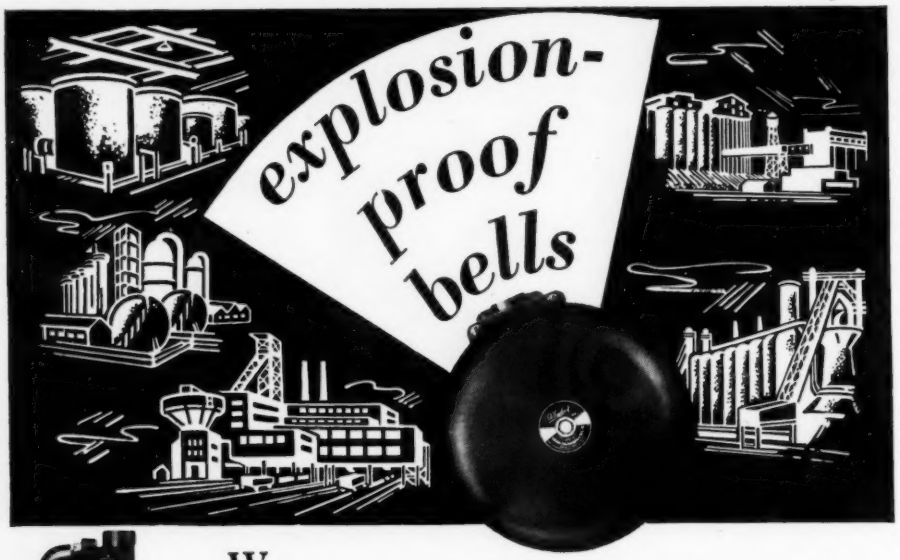
This new, lower-resistance steel line wire, with a minimum breaking strength of 1800 pounds, makes possible spans to 600 feet in Heavy Loading, 650 feet in Medium Loading and 700 feet in Light Loading areas. Where terrain and other conditions permit the use of extra long spans, this means a 40% reduction in pole structures. The savings in materials and in construction costs will be apparent.

Before building new, or replacing old rural lines, investigate the possibilities of **Crapo** HTL-195! Write for complete information, including Manual of Engineering Data, No. A-195!

Pioneers in the development of high tensile and extra-high tensile steel line wire, and associated products, for the telephone industry.

INDIANA

STEEL & WIRE COMPANY, INC.
MUNCIE, INDIANA



Side view of the Signal Explosion-proof Bell

When hazardous conditions demand explosion-proof electrical equipment, be sure to include **Wheelock Signals' Explosion-proof, Contactless Vibrating Bell.**

All current-carrying elements are enclosed in a rugged housing and all mechanical parts are fully protected against atmospheric corrosion.

Wheelock Signals' Explosion-proof Bell, built by the originators of Underdome Bells, has been proved in service and is listed by Underwriters' Laboratories, Inc. for the following:

Class I, Groups B, C and D Class II, Groups F and G.

Write for Bulletin EPI-4

SOLD THROUGH ELECTRICAL WHOLESALERS

Signal Engineering & Mfg. Co., has changed its name to
Wheelock SIGNALS INC
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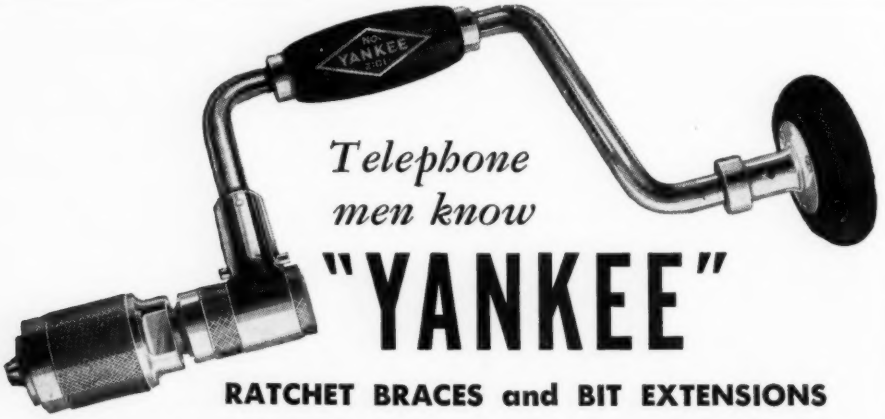


Telephone men know

"YANKEE"

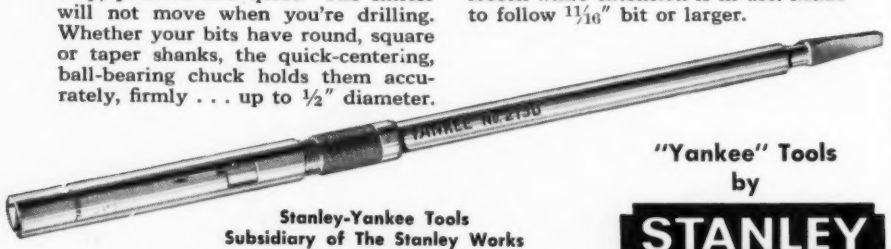
RATCHET BRACES and BIT EXTENSIONS

"Yankee" Ratchet Braces and Bit Extensions are old telephone company friends. Maintenance and installation men know from years of using them the sturdy stuff they're made of, the fine way they're made and how much these tools ease up a job.

The No. 2101 Brace was made with an installer time ticket in mind. It has the famous "Yankee" Ratchet that's easy, positive and quiet. The shifter will not move when you're drilling. Whether your bits have round, square or taper shanks, the quick-centering, ball-bearing chuck holds them accurately, firmly . . . up to ½" diameter.

You bore true and fast because the patented sweep handle cancels out excessive play or binding. Practically unbreakable hard rubber handles.

The No. 2150 Bit Extension holds square shanks firmly in an inner socket. Chuck is constructed to accommodate all types of square shanks securely and without jamming. Taper end of shank is accurately machined. Bit cannot loosen while extension is in use. Made to follow $1\frac{1}{16}$" bit or larger.



"Yankee" Tools by STANLEY

Stanley-Yankee Tools
Subsidiary of The Stanley Works
Philadelphia 33, Pa.

from $4.60 to $5.60 and four-party rates are being increased from $2.25 to $2.50.

In his petition, Mr. Cantrell pointed out that the Riceville Telephone Co. was a magneto type system serving only 78 customers. The petitioner has purchased a common battery switchboard, established a central office and replaced or rebuilt about 80 per cent of the lines. The company now has 128 customers, and is offering extended area service to Athens. Also, service is now available on a 24-hour basis.

Pennsylvania Company Asks Increase in Rates

The Columbia Telephone Co. has asked the Pennsylvania Public Utility Commission for permission to raise rates by approximate.y 11 per cent, it was reported on Oct. 2.

The proposed new schedule would eliminate 10-cent toll rates on calls between Columbia and Mount Joy, Mount Joy and Marietta, and Elizabethtown and Marietta.

This would be the company's first rate increase since March 1950, according to Henry Y. Smith, president.

Present and proposed rates for the Columbia, Elizabethtown, Mount Joy and Marietta exchanges: four-party residence, $2.35 and $2.60; one-party residence, $3.75 and $4; four-party business, $3.75 and $4.25; one-party business, $5.50 and $6.25.

Present and proposed rates for Mountville: four-party residence, $2.50 and $2.75; one-party residence, $4.00 and $4.25; four-party business, $4.50 and $5.25; and one-party business, $6.00 and $7.50.

Wisconsin Co-op Requests Increased Telephone Rates

A request to increase rates has been filed with the Wisconsin Public Service Commission by the West Wisconsin Telephone Cooperative of Downsville. It is consolidating several rural telephone companies which serve Rock Falls, Eau Galle, Downsville and Wilson, it was reported on Sept. 26.

Higher fees are being sought to finance rebuilding of recently acquired properties and to convert operation to automatic, according to the commission.

North Dakota Independent Asks OK to Purchase

The Reservation Mutual Aid Telephone Corp., Parshall, has been authorized by North Dakota Public Service Commission to construct and operate telephone facilities in McKenzie

PAGE LASHING WIRE OF Stainless Steel

You get a neat and long-lasting job every time you use PAGE Stainless Steel Lashing Wire! Ideal for lashing conductor cables (lead or neoprene covered) to a strand messenger by Neale or Western Electric Machine. Coils tailored to fit machine specified.

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Specifications Pressure-Guard

Field Adjustment Range	0 to 15 PSI
Factory Setting	2 ±¼ PSI on falling pressure
Pressure Response	4 ±½ oz.
Proof Pressure	30 PSI
Electric Rating	0.01 amp 110V DC
Load Resistor	Carbon composition 330,000 OHM 1 watt
Take-Off Tube	Tinned Copper 6′ x ¼″ x 0.035
Drop Wire	6′ Type SJ0 #18 stranded 0.2 conductor
Size	6″ x 4½″ x 2½″
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County, and to purchase the Farmers Telephone Co. of Arnegard property, it was reported on Oct. 2.

The company proposes to convert the Arnegard system to automatic operation, and to improve and extend its rural facilities.

Southern Bell Curtails Louisiana Construction

Southern Bell Telephone & Telegraph Co. notified the Louisiana Public Service Commission on Oct. 7 that because of low earnings it will be able to carry out less than one-third of the construction required to meet public demand for telephone service in Louisiana.

The company said only about 14 million dollars a year will be available for expansion and improvement of service in the state.

In a letter to the commission, Homer G. Bartee, company vice president and general manager, said:

"The company's earnings in Louisiana are too low to support the raising of new capital for investment in the state. Moreover, capital raised on the basis of earnings realized in her sister states where service expansion is likewise needed cannot properly be diverted to Louisiana.

"Thus, without earnings sufficient to bring in new capital, the Louisiana construction program is necessarily limited to the amount of the state's depreciation accruals and salvaged materials. The present estimate is that about 14 million dollars per year will be available from these sources."

Mr. Bartee said that the commission's 1956 order reducing telephone rates estimated that Southern Bell would have to pay only 3.35 per cent interest for that portion of its new construction funds raised by borrowed money. Present telephone rates make allowance for only that much. Last June, however, 4.9 per cent was the cheapest rate the company could secure on its bonds through competitive bidding.

"Of course," Mr. Bartee added, "a large portion of expansion money must be raised through the sale of stock, so that the combined cost of new capital is substantially above this 4.9 per cent.

"At the same time, increases in wage rates and other costs, along with the rate reduction ordered by the commission, have reduced the earnings level so that, based on actual experience for the first six months of 1957, the Louisiana intrastate operations are producing a return of only 4.24 per cent."

Bartee said the failure of present rates for telephone service to cover necessary costs was brought to the commission's attention by the company's application, on Aug. 14, 1957, for

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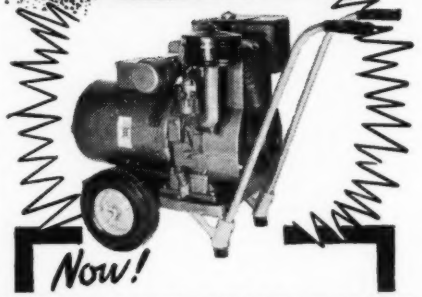

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an immediate emergency rate increase. At the same time, the company asked that the commission, after full investigation, fix fair rates for the future.

"That application showed that the paramount reason for the emergency increase was to keep the then-acute situation from becoming worse," he continued. "Not only is the future progress and development of telephone service in Louisiana threatened, but the economic progress and development of the state itself may be retarded if service cannot be given to new industries and new residential areas. Unfortunately, the commission has granted no relief on that emergency application, and, as might be expected, service conditions continue to grow more acute."

Bartee emphasized that, despite inadequate earnings, Southern Bell expects to reinvest the entire amount of Louisiana depreciation accruals within the state in such a manner as will best serve the over-all public needs. Even so, he said, the company must defer a large part of its construction program to keep within the amount of these available funds.

Ill. Company Granted Raise

The Illinois Commerce Commission on Sept. 25 granted the request of the Kaskaskia Valley Telephone Co., Patoka, for a $17,034 increase. This represents a 5.5 per cent return on a plant fair value of $163,000 (TELEPHONY, Aug. 3, p. 34).

Gains OK to Buy in Minn.

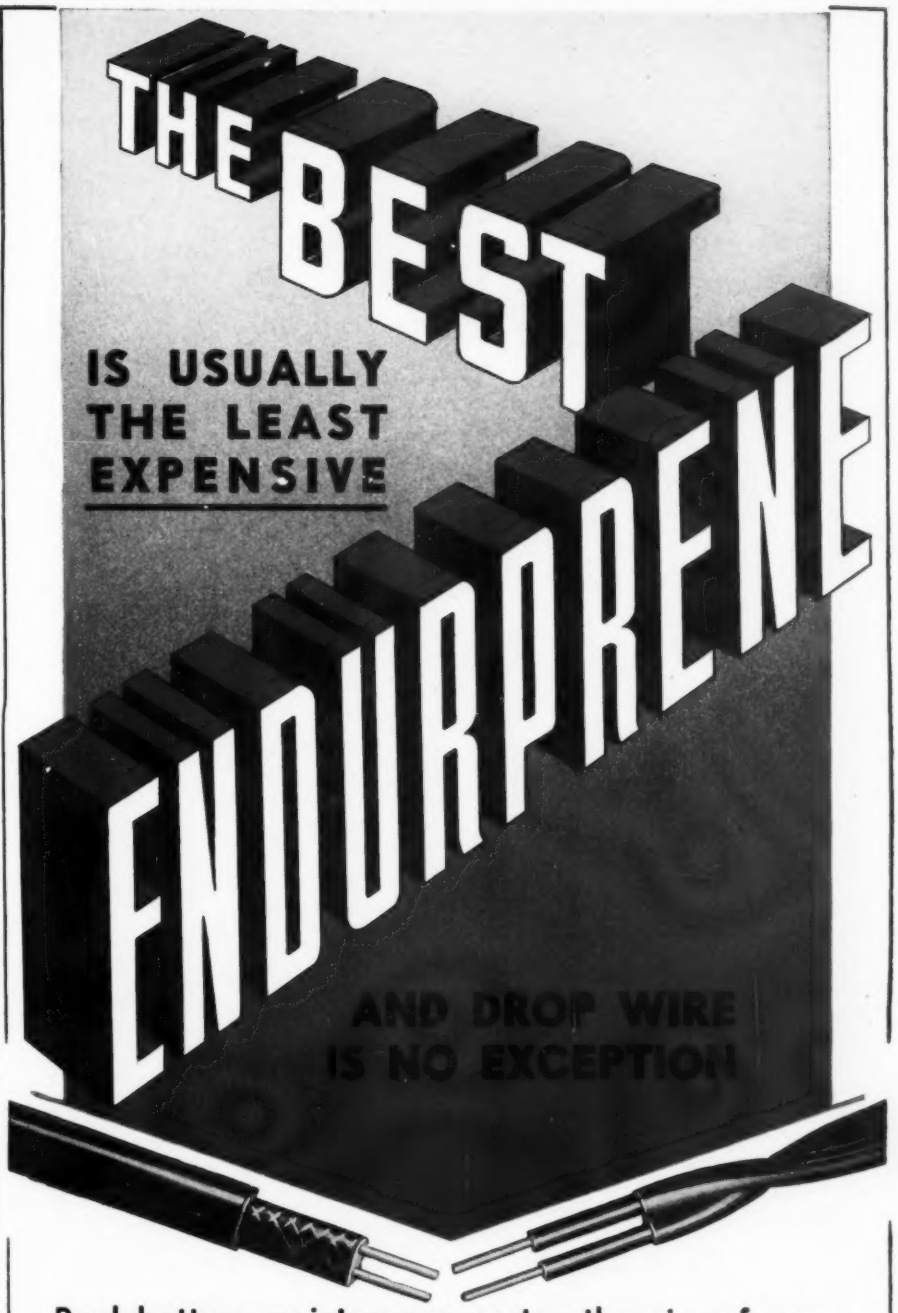
The Minnesota Railroad & Warehouse Commission on Oct. 11 authorized the Paul Bunyan Rural Telephone Cooperative, Bemidji, to purchase from the Nebish Township Telephone System its entire telephone property, consisting of about 67 stations.

Bell Asks Minn. Rate Raise

Northwestern Bell Telephone Co. on Oct. 15 filed an application for higher rates with the Minnesota Railroad & Warehouse Commission. A hearing was set for Dec. 10.

Conn. Stock Issues OKd

Southern New England Telephone Co. secured Connecticut Public Utilities Commission approval on Oct. 11 to sell at par 1,358,300 shares of its $25 par common stock.



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Jamaica Triples Telephone Installations in 12 Years

The number of telephones in the fast-developing country of Jamaica, B.W.I., has tripled in the past dozen years, and more than 4 million dollars worth of telephone equipment will be installed by 1961 to keep pace with industrial and tourist expansion, according to the Jamaica Industrial Development Corp.

The Jamaica Telephone Co. Ltd., in a report prepared for Carroll C. daCosta, international representative of the corporation, said that the number of telephones in Jamaica had increased from 8,200 in 1945 to 26,000 in 1957, and the number of exchanges has increased from 18 small manual boards to 38 modern automatic exchanges.

The company anticipates an increase to 36,000 phones on 50 exchanges in the next five years, Mr. daCosta said, with 50 trunk lines which will include a main radio trunk network.

"While the number of telephones is not so impressive, by U.S. standards, when one considers a million and a half population in Jamaica," Mr. daCosta said, "the rate of increase indicates a

Mrs. Jean S. Augustine, president of the Lexington (Va.) Telephone Co., wearing the authentic Gay 90's costume she donned for an address covering local telephone history, which she delivered to the Rockbridge Historical Society in Lexington. The paper was presented in connection with the 60th anniversary of the USITA and also the 60th birthday of the Lexington company. Her bonnet and her jewelry belonged to her great-grandmother. She holds a magneto telephone once used in the company's Natural Bridge exchange.

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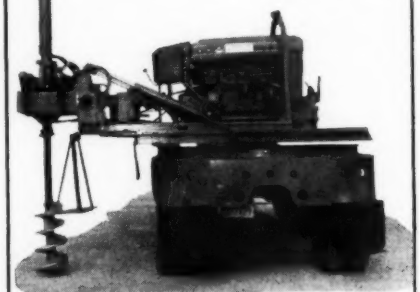

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very healthy growth. The Jamaica Telephone Co., Ltd. is working diligently, along with other utilities and services, to insure the industrial investor a modern, progressive community for his manufacturing facility."

Police Blame Line Hogs For Death in California

Police in Ventura, Cal., on Sept. 17 blamed an uncooperative pair of telephone users for the death of an aged heart attack case because they refused to give up a party line to an officer attempting to summon a resuscitator unit.

(Editor's Note: An emergency party line use law became effective in California on Sept. 11, but it is not known whether a court case has developed from the above. The law provides that persons failing to yield a telephone line in cases of emergency are guilty of a misdemeanor, the measure applying in emergency calls to the police or fire departments, for medical aid or for an ambulance. A copy of the law is to be published in every telephone directory distributed in the state.)

Officer Robert Wire reported that he and an ambulance crew were dispatched to the home of John D. Fulton after the latter had been stricken.

Mr. Wire said he immediately picked up the telephone in the Fulton home, and, finding the line in use, identified himself and asked that the line be released because of an emergency.

"They just stayed on the line, saying nothing, and I could hear them breathing," the exasperated policeman said.

Finally—after a precious delay—Wire ran out to his motorcycle and contacted the police station on his vehicle's short-wave radio. His superiors relayed the call for help to the Ventura Fire Department but "it cost us about 10 minutes," Wire said.

When the rescue squad arrived, Mr. Fulton was dead, he said.

Pride: Good or Bad

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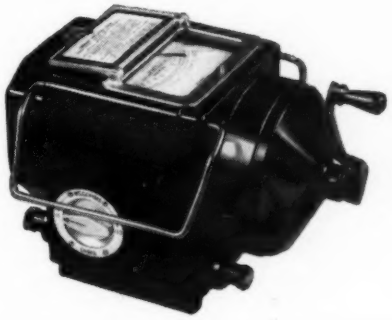

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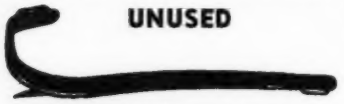

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